FAA Aviation News

SAFETY FIRST FOR GENERAL AVIATION

Night Flying Safety

November/December 2008
Volume 47/Number 6

In this issue...

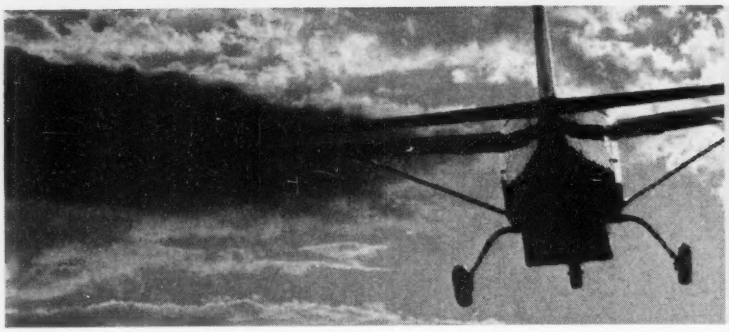
Shedding Light on Night Flight

Blackout: Avoiding CFIT at Night

Taming the Non-towered Babble

Airports—The Part 139 Advantage

Surface Safety



About the cover: *A Cessna* Caravan *flies into the sunset. As the days get shorter, pilots must sharpen their night flying skills and assess their personal minimums. Photo courtesy of Cessna.*

Features

Shedding Light on Night Flight 2

Blackout: Avoiding CFIT at Night..... 6

Taming the Non-towered Babble..... 9

Airports—The Part 139 Advantage 13

Index of Articles 2007-2008..... 15

Surface Safety..... 21

Departments

Jumpseat 1

Aeromedical Advisory 8

Checklist..... 12

Hot Spots..... 25

Nuts, Bolts, and Electrons 28

Flight Forum..... 31

Aviation Maintenance Alerts 32

AV News..... 34

Editor's Runway..... 36

FAA Faces ..... Inside Back Cover

U.S. Department of Transportation
Federal Aviation Administration

ISSN: 1057-9648
November/December 2008
Volume 47/Number 6

Mary E. Peters *Secretary of Transportation*
Robert A. Sturgell *Acting Administrator*
Nicholas A. Sabatini *Associate Administrator for Aviation Safety*
James J. Ballough *Director, Flight Standards Service*
John S. Duncan *Manager, General Aviation and Commercial Division*
Julie Ann Lynch *Manager, Plans and Programs Branch*
Susan Parson *Editor*
Louise C. Oertly *Associate Editor*
James R. Williams *Assistant Editor*
Lynn McCloud *Contributor*
Gwynn K. Fuchs *Art Director*

The FAA's Flight Standards Service, General Aviation and Commercial Division's Plans and Programs Branch (AFS-805) publishes *FAA Aviation News* six times each year in the interest of aviation safety. The magazine promotes safety by discussing current technical, regulatory, and procedural aspects affecting the safe operation and maintenance of aircraft. Although based on current FAA policy and rule interpretations, all material herein is advisory or informational in nature and should not be construed to have regulatory effect.

The FAA does not officially endorse any goods, services, materials, or products of manufacturers that may be referred to in an article.

All brands, product names, company names, trademarks, and service marks are the properties of their respective owners. All rights reserved.

Certain details of accidents described herein may have been altered to protect the privacy of those involved.

Comments or questions about this magazine should be directed to the staff at (202) 267-8212. Written comments can be mailed, faxed, or e-mailed. Mailing address: Editor, *FAA Aviation News*, Federal Aviation Administration, AFS-805, 800 Independence Avenue, SW, Washington, DC 20591. The FAX number is (202) 267-9463. The *FAA Aviation News* e-mail is AviationNews@faa.gov.

The Office of Management and Budget has approved the use of public funds for the printing of *FAA Aviation News*.

The magazine is available on the Internet at: http://www.faa.gov/news/aviation_news.

GOVERNMENT PRINTING OFFICE (GPO) SUBSCRIPTION SERVICES

New Orders: The Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9371, sells *FAA Aviation News* on subscription. Use the self-mailer form in the center of this magazine to subscribe. For new orders, you can telephone the GPO at (202) 512-1800 or toll-free at 1-866-512-1800. You may also order via the Internet at http://bookstore.gpo.gov.

Subscription Problems/Change of Address: To notify the Government Printing Office of any subscription problems or a change of your address you should send your mailing label along with your comments to: Superintendent of Documents, U.S. Government Printing Office, Contact Center, Washington, DC 20408-9375. You can also call (202) 512-1800 and ask for **Customer Service**. The GPO toll-free number is 1-866-512-1800. You can send your information by facsimile. The FAX telephone number is (202) 512-2104

The U.S. Government Printing Office mails up to four renewal notices. One notice is sent at 90 days, 60 days, and 30 days before expiration. The final renewal notice is mailed 30 days after expiration. To ensure continued service without interruption, please return your renewal notice with payment promptly. Your subscription expiration date is listed on your mailing label.

••••••••••••••3-DIGIT 342
FAN SMITH212J JUN05 R 1 423•
JOHN SMITH
212 MAIN ST
FORESTVILLE MD 20747

JAMES J. BALLOUGH
DIRECTOR, FLIGHT STANDARDS SERVICE

Jumpseat

Cultivating Targeted Safety Solutions

Our goal is to achieve the lowest possible accident rate and constantly improve safety. We do this several ways. As a regulator, FAA develops and enforces regulations, certifies and oversees operators and maintenance organizations, and certifies airmen.

As the leading proponent of aviation safety, we must build on this regulatory foundation and actively promote safety through targeted education and outreach activities. That is this publication's role as well as the role of the FAA Safety Team (FAASTeam). The FAASTeam numbers some 128 FAA safety professionals and more than 2,000 volunteer representatives across the United States who develop *targeted* programs to improve safety.

When I joined FAA, we had an Aviation Safety Program referred to as "Man in a Van." A safety program manager would load up a G-car (government vehicle) with videos and show them at safety seminars. There could be safety benefits, but there was no guarantee that the videos were focused on an area's risks.

Today's FAASTeam has a more rigorous, data-based approach to improving safety, which is essential. Risks are not the same across the U.S. aviation community; neither are solutions. For example, the risks of flying in the Rocky Mountains are not the same as the risks of Florida flying. To be sure, fundamentals apply across all forms of GA flying, such as basic skills, knowing your personal minimums, making sure your equipment is airworthy, and more. Yet, if you examine the data you will find variations across the country.

Examining the data and analyzing risks is the responsibility of the FAASTeam's Data Analysis Work Group. Based at the FAASTeam National Resource Center in Lakeland, Florida, this group works with the regional FAASTeam managers on data analysis. For example, a review of pilot deviation reports filed by FAA's Air Traffic Organization showed that pilot deviations had increased over a three-year period in the Northwest Mountain states. Accordingly, the region's FAASTeam put together a targeted outreach plan that included safety events in each state with special emphasis on altitude, airspace, Special Use Airspace, and Temporary Flight Restrictions. FAASTeam managers also worked with their representatives to craft mitigation strategies with flight schools and for Certificated Flight Instructor seminars.

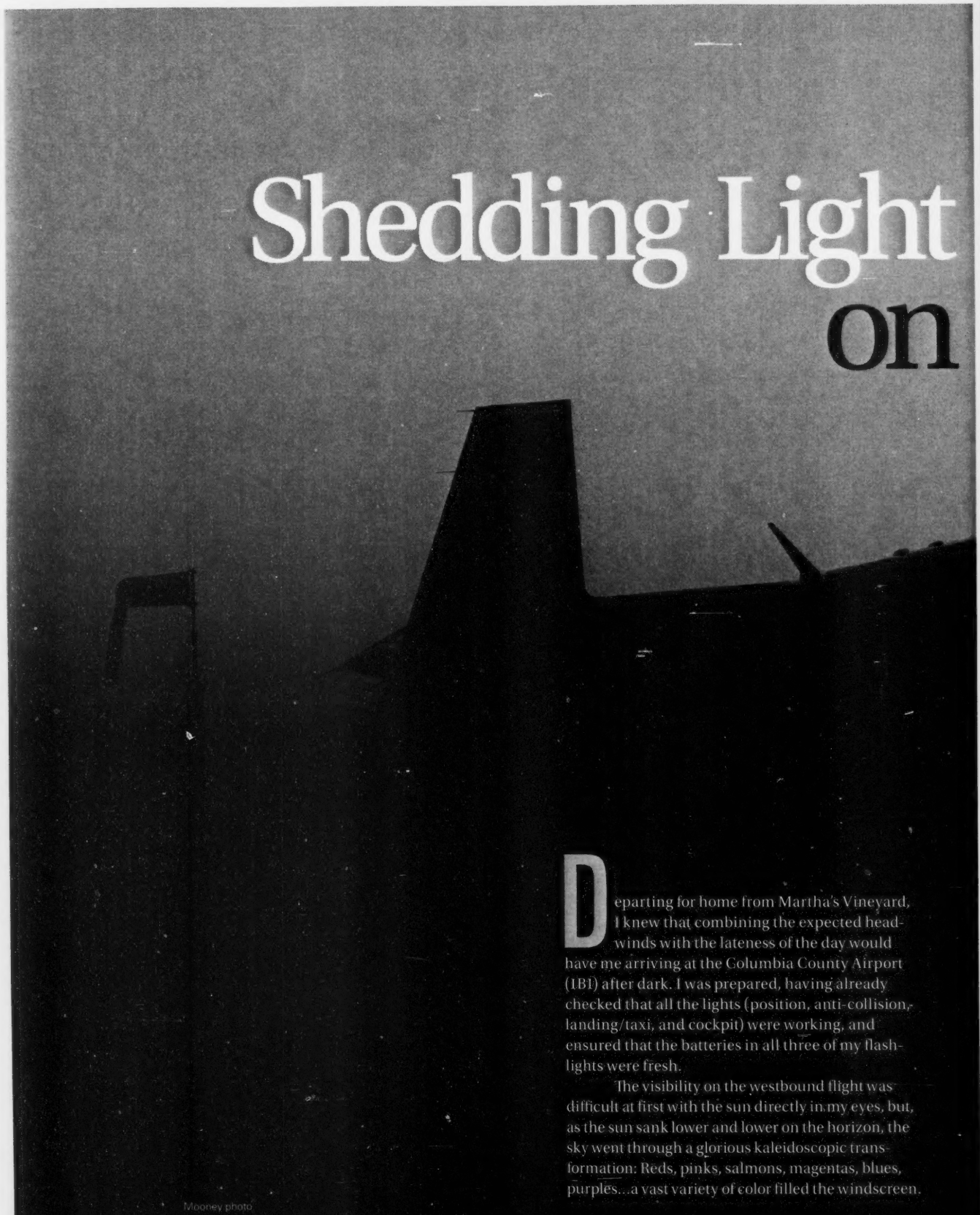
FAASTeam managers and representatives are supported by the National Resource Center, which is featured in this month's FAA Faces column. At the Center, we produce a host of safety education products. Our biggest product: The FAASTeam's Web site at www.faasafety.gov. Here you can sign up to be notified about FAA-sponsored events and seminars. You can take advantage of the online learning center. And, you can join the Pilot Proficiency Program (WINGS) to maintain your safety awareness and keep track of your recurrent training.

"The best way to get started is to sign up with the FAASTeam at www.faasafety.gov."

The FAASTeam also addresses the training needs of Aviation Maintenance Technicians (AMT), formerly known as the A&P mechanic and IA. Through the AMT Awards Program, FAA recognizes AMTs and AMT employers who receive and/or promote aviation maintenance training. Starting in January 2009, the AMT Awards Program will be available through www.faasafety.gov. Automating the awards program will allow AMTs and AMT employers a simple online application process. Coming soon on www.faasafety.gov will be a searchable listing of Inspection Authorization recurrent training courses.

Yes, we are here to help you. The best way to get started is to sign up with the FAASTeam at www.faasafety.gov.

Shedding Light on



Departing for home from Martha's Vineyard, I knew that combining the expected headwinds with the lateness of the day would have me arriving at the Columbia County Airport (1B1) after dark. I was prepared, having already checked that all the lights (position, anti-collision, landing/taxi, and cockpit) were working, and ensured that the batteries in all three of my flashlights were fresh.

The visibility on the westbound flight was difficult at first with the sun directly in my eyes, but, as the sun sank lower and lower on the horizon, the sky went through a glorious kaleidoscopic transformation: Reds, pinks, salmons, magentas, blues, purples...a vast variety of color filled the windscreen.

Mooney photo

Night Flight

DOUG STEWART

Soon my Global Positioning System (GPS) automatically switched from "day" display to "night" display, signaling official sunset and thus reminding me to turn on the airplane's position lights. Though it was still quite light aloft, the shadows on the ground had lengthened and disappeared in darkness, and now the lights of houses and vehicles on the ground were starting to appear. Whereas the sun was just approaching the horizon from my perspective at 6,500 feet mean sea level (MSL), for the folks who found themselves ground bound it had indeed set.

The estimated time en route (ETE) to the 1B1 as displayed on my GPS said I should be there in another 35 minutes. As I thought ahead to my arrival and landing, I considered whether I would be able to log it as a night landing. This led to wondering how much of the total flight I would be able to log as "night" flight. At least I knew the answer to when to turn on the position lights, as I had already correctly completed that task. But as I approached my home base, it became evident that not all pilots can answer some questions relative to flying at night.

Turn on the Lights!

When I was about 15 miles to the southeast of the airport, with the airport beacon in sight, I cancelled flight following and switched to the Common Traffic Advisory Frequency (CTAF) to monitor any activity. I soon heard the pilot of a Mooney announce departure from runway

21, "remaining in the pattern," followed by a Decathalon pilot calling downwind. "Shouldn't be any separation issues there," I thought, as I strained to see if I could pick them out visually. "Don't try to see them straight ahead, Stewart, pick them up in your peripheral vision," I reminded myself, remembering that the visual scanning techniques for "see and avoid" are different at night.

As the Decathalon pilot announced turning final for a touch-and-go, the Mooney reported a mid-field downwind leg. It sounded as if these two pilots were doing a good job keeping each other informed as to where they were in the pattern. From my vantage point of about 12 miles to the southeast and at an altitude of 3,500 feet, I could see the landing light of the Decathalon as it touched down, rolled out, and then took off.

If an aircraft is not equipped with position lights, it will turn into a figurative pumpkin with the setting of the sun and it should not be flown again until the sun rises.

I was having a heck of a time picking out the Mooney. Apparently, I wasn't the only one as the Decathalon pilot announced, "Hey Mooney, your position lights sure aren't very bright. In fact, I'm having a hard time finding you."

"Oops...how's this?" replied the Mooney pilot as not only the position lights, but also the anti-collision lights of his airplane suddenly appeared. "Guess I forgot. Thanks for the heads up," he added. (Sometimes it's nice to know that I am not the only one who succumbs to CRM—Can't Remember Much.)

When Does "Night" Start?

This is a good time to review what the regulations say about night flight, especially since we are at that time of the year when many of us are most likely to have occasion to fly at night. It is interesting to note that the regulations refer to three different periods of time in relation to night operations: One for equipment, one for currency, and one for logging night operations.

Let's start by looking at the definition of night found in Title 14 Code of Federal Regulations (14 CFR) part 1: "Night means the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the *American Air Almanac*, converted to local time."

When referring to the *Almanac*, we find that the period of civil twilight changes relative to geographic position as well as the time of year. Thus, it might be 15 or 20 minutes long, it could be almost an hour, or any time in between. So the only flight time that can be logged as night flight is flying that takes place during the period of time defined as "night" in 14 CFR part 1.

Night Flying Currency

But, what about those takeoffs and landings that have to be made in order to carry passengers? Does the same time period apply? No, it doesn't. If we refer to 14 CFR section 61.57, Recent Flight Experience: Pilot In Command, we find that, in order to carry passengers "during the period beginning one hour after sunset and ending one hour before sunrise," the pilot in command must have made at least three takeoffs and three landings to a full stop, between the hours of one hour after sunset to one hour before sunrise, within the preceding 90 days. The regulations also state that the pilot be the sole manipulator of the controls, which means that, if you are a Certificated Flight Instructor (CFI) conducting night training, the takeoffs and landings that your client makes do not count towards your own night currency.

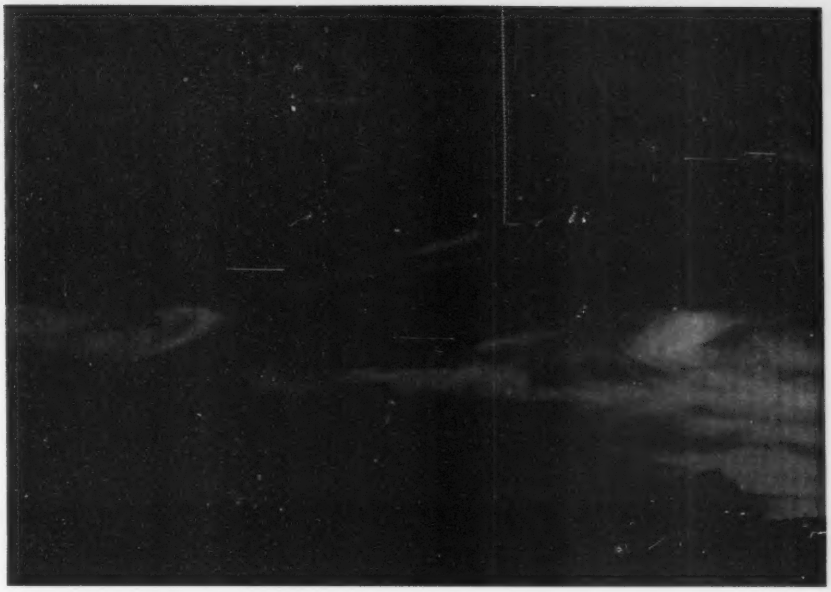
Under the regulations, the landing that the Decathalon pilot made would not count towards his night currency for two reasons. One, the landing was a touch-and-go and not a full-stop landing.

For More Information

Risk Management for VFR Flight at Night
http://www.faa.gov/library/manuals/pilot_risk/media/4.0%20Night%20VFR.pdf

"N.I.G.H.T." *FAA Aviation News*, November/December 2005
http://www.faa.gov/news/aviation_news/2005/media/novdec2005.pdf

AOPA Air Safety Foundation's Night VFR Checkup
http://www.aopa.org/asf/hotspot/checkup.html



Laurie Zaleski photo

The other reason was because, although it was dark at the time as civil twilight had definitely ended, it still wasn't an hour after sunset.

Night Lights

We've reviewed what the rules say about logging night flight and recency of experience, but what about the rules relative to those lights on the airplane? It is here that the rules might seem contradictory. In 14 CFR section 91.205 (c) Visual Flight Rules (night), it states that for VFR (visual flight rules) flight at night (let's remember the definition discussed above) one needs all the daytime instruments and equipment, plus approved position lights, an approved anti-collision light system, and an adequate source of electrical power.

Let's discuss the issue of anti-collision lights a little further. I used to try and convince myself that I didn't need an anti-collision light on my PA-12 using the argument that it was grandfathered from the requirement. However, I was wrong since 14 CFR section 91.205 states specifically that: "Anti-collision light systems initially installed after August 11, 1971, on aircraft for which a type certificate was issued or applied for before August 11, 1971, must at least meet the light standards... that were in effect on August 10, 1971, except that the color may be either aviation red or aviation white." (Yes, I installed a flashing beacon on the top of the wing-root fairing to comply with the regulation.) Continuing to read 14 CFR section 91.205, we see that a landing light is not required unless the airplane is being flown for hire. This regulation could lead to believing that you only need those lights between the end and beginning of evening and morning civil twilight, as the regulation states: "For VFR flight at night..."

But, reading just a little further in the regulations we find 14 CFR section 91.209 Aircraft Lights, which says that: "No person may: (a) during the period from sunset to sunrise... (1) Operate an aircraft unless it has lighted position lights." (Please, all you Alaska pilots, don't get upset if I don't mention the exceptions to the rules.) It was this regulation that ended my flying day when I used to ferry a non-electric Champ from Massachusetts to Florida every fall. With no position lights on that airplane, I had to be on the ground by the time the sun had set. The rule makes it clear that, if an aircraft is not equipped with position lights, it will turn into a figurative pumpkin with the setting of the sun and it should not be flown again until the sun rises.

Review

So, as we find ourselves at that time of the year with the least daylight, remember the three different time periods we need to be aware of:

- Sunset to sunrise for having the lights turned on.
- That period of time between the end of evening civil twilight and the beginning of morning civil twilight for logging our flight as "night."
- One hour after sunset to one hour before sunrise for logging takeoffs and landings for recent experience currency.

Oh, by the way, did I mention that by the time I was tying the airplane down the full moon was casting sharp shadows on the ground? I didn't need my flashlight at all as I reflected on a wonderful flight at night. Whether you fly at night or not, may you be blessed with...blue...errr, uhhh...clear skies and tailwinds!

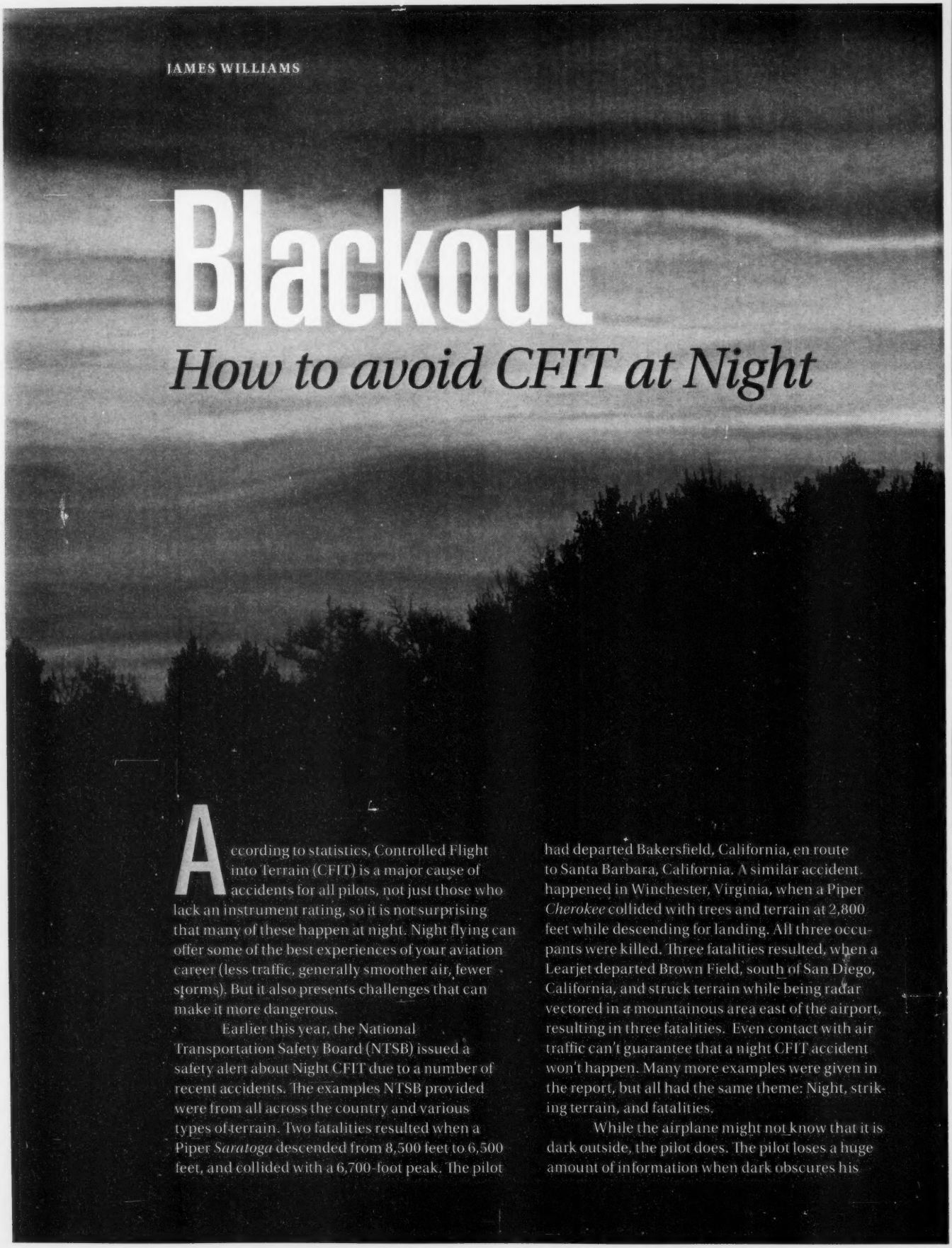
Doug Stewart is the 2004 National CFI of the Year, a Master CFI, and a Designated Pilot Examiner (DPE). He operates DSFI, Inc (www.dsflight.com) based at the Columbia County Airport (1B1) in Hudson, New York.

© 2008 Doug Stewart. Written permission from the author is required to reprint this copyrighted article, which is adapted from one previously published in *Vintage Aircraft*.

JAMES WILLIAMS

Blackout

How to avoid CFIT at Night



According to statistics, Controlled Flight into Terrain (CFIT) is a major cause of accidents for all pilots, not just those who lack an instrument rating, so it is not surprising that many of these happen at night. Night flying can offer some of the best experiences of your aviation career (less traffic, generally smoother air, fewer storms). But it also presents challenges that can make it more dangerous.

Earlier this year, the National Transportation Safety Board (NTSB) issued a safety alert about Night CFIT due to a number of recent accidents. The examples NTSB provided were from all across the country and various types of terrain. Two fatalities resulted when a Piper *Saratoga* descended from 8,500 feet to 6,500 feet, and collided with a 6,700-foot peak. The pilot had departed Bakersfield, California, en route to Santa Barbara, California. A similar accident happened in Winchester, Virginia, when a Piper *Cherokee* collided with trees and terrain at 2,800 feet while descending for landing. All three occupants were killed. Three fatalities resulted, when a Learjet departed Brown Field, south of San Diego, California, and struck terrain while being radar vectored in a mountainous area east of the airport, resulting in three fatalities. Even contact with air traffic can't guarantee that a night CFIT accident won't happen. Many more examples were given in the report, but all had the same theme: Night, striking terrain, and fatalities.

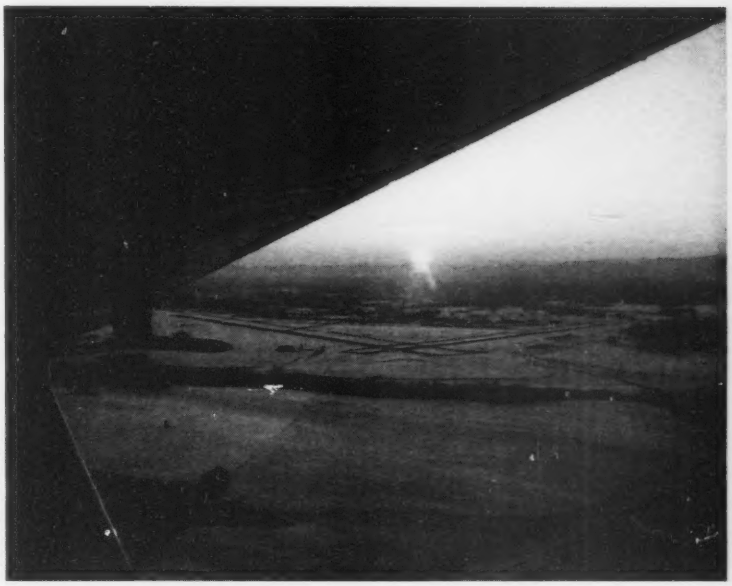
While the airplane might not know that it is dark outside, the pilot does. The pilot loses a huge amount of information when dark obscures his

or her view out the windshield. Innovations like Enhanced Flight Visual Systems (EFVS), Synthetic Vision Systems (SVS), and night vision goggles (NVG) may one day eliminate the threat of unseen terrain or obstacles, but they will take some time to become widely available to most GA pilots.

In the meantime, how can you avoid becoming a statistic? Planning and preparation are the best defenses. Taking some time before you take-off to familiarize yourself with your flight and the terrain you'll be operating over is well worth the investment. The NTSB Safety Alert offers the following tips to avoid a night CFIT accident:

- Terrain familiarization is critical to safe visual operations at night. Use sectional charts or other topographic references to ensure that your altitude will safely clear terrain and obstructions all along your route.
- When planning a nighttime Visual Flight Rules (VFR) flight, follow Instrument Flight Rules (IFR) practices, such as climbing on a known safe course until well above surrounding terrain. Choose a cruising altitude that provides terrain separation similar to IFR flights (2,000 feet above ground level in mountainous areas and 1,000 feet above the ground in other areas).
- When receiving radar services, do not depend on air traffic controllers to warn you of terrain hazards. Although controllers will try to warn pilots if they notice a hazardous situation, they may not always be able to recognize that a particular VFR aircraft is dangerously close to terrain.
- When ATC issues a heading along with an instruction to "maintain VFR," be aware that the heading may not provide adequate terrain clearance. If you have any doubt about your ability to visually avoid terrain and obstacles, advise ATC immediately and take action to reach a safe altitude.
- For improved night vision, the FAA recommends the use of supplemental oxygen for flights above 5,000 feet.
- If you fly at night, especially in remote or unlit areas, consider whether a global positioning system (GPS)-based terrain awareness unit would improve your safety of flight.

James Williams is a Technical Writer-Editor in Flight Standards Service's General Aviation and Commercial Division. He is also a pilot and a ground instructor.



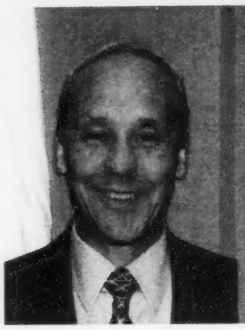
Michael W. Brown photo

For More Information

The Cheapest Insurance, *FAA Aviation News*, March/April 2008, available online at http://www.faa.gov/news/aviation_news/2008/media/marapr2008.pdf

NTSB Safety Alert: Controlled Flight into Terrain in Visual Conditions at http://www.ntsb.gov/alerts/SA_013.pdf

NTSB safety recommendation letter issued as a result of minimum safe altitude warning and ATC awareness issues at http://www.ntsb.gov/Recs/letters/2006/A06_44_47.pdf



Aeromedical Advisory

FREDERICK E. TILTON, M.D.
FAA FEDERAL AIR SURGEON

Curbing Carbon Monoxide

Carbon monoxide poisoning is a safety issue that pilots may not often think about, but it can have significant, even fatal, consequences for aircraft occupants. Carbon monoxide (CO) can cause a form of hypoxia by attaching tightly to the hemoglobin and preventing oxygen (O_2) from binding, thus blocking the transport of O_2 throughout the body.

Know the Symptoms

The most common symptoms of carbon monoxide exposure include varying degrees of headache, drowsiness, shortness of breath, blurred vision, and impaired judgment. These symptoms tend to worsen at altitude, and there are wide personal variations, depending on the circumstances and whether or not the individual is a smoker.

Know the Danger Signs

Because it is both colorless and odorless, a pilot may not be aware that CO is present until symptoms develop. As a by-product of combustion, however, carbon monoxide is frequently associated with gases that do have an odor and color. By avoiding an environment with known combustion fumes, you may also avoid carbon monoxide. Any unusual cabin smell or sensation of illness should trigger immediate troubleshooting:

The most common symptoms of carbon monoxide exposure include varying degrees of headache, drowsiness, shortness of breath, blurred vision, and impaired judgment.

- Turn the cabin heat completely off.
- Increase cabin fresh air ventilation to maximum.
- Open windows, if the flight profile and aircraft flight manual so permit.
- If available (provided it does not pose a safety or fire hazard), use supplemental oxygen.
- Land as soon as possible.
- Let Air Traffic Control know of your concerns, and ask for vectors to the nearest airport.
- Once on the ground, seek medical attention.
- Before continuing the flight, have the aircraft inspected by a certificated mechanic.

An Ounce of Prevention...

To minimize the risk of CO in your aircraft, ensure that aircraft heating/ventilation systems and exhaust manifolds are all in good working order, as specified by the manufacturer and the FAA. Pay special attention to older aircraft, because of corrosion or simple wear and tear, and have a certificated mechanic verify firewall and aircraft structural integrity.

Another preventive action is to use one of the many CO detection and monitoring devices available on the market today. The least expensive are hand-held or stick-on colorimetric devices that change color in the presence of carbon monoxide. Though not perfect or foolproof, these devices are generally effective. Powered detectors for aviation use are available as well, either as portable or panel-mounted units. These may provide greater reliability.

For more information on this subject and other important topics, take a look at the carbon monoxide information brochure at http://www.faa.gov/pilots/safety/pilotsafetybrochures/.

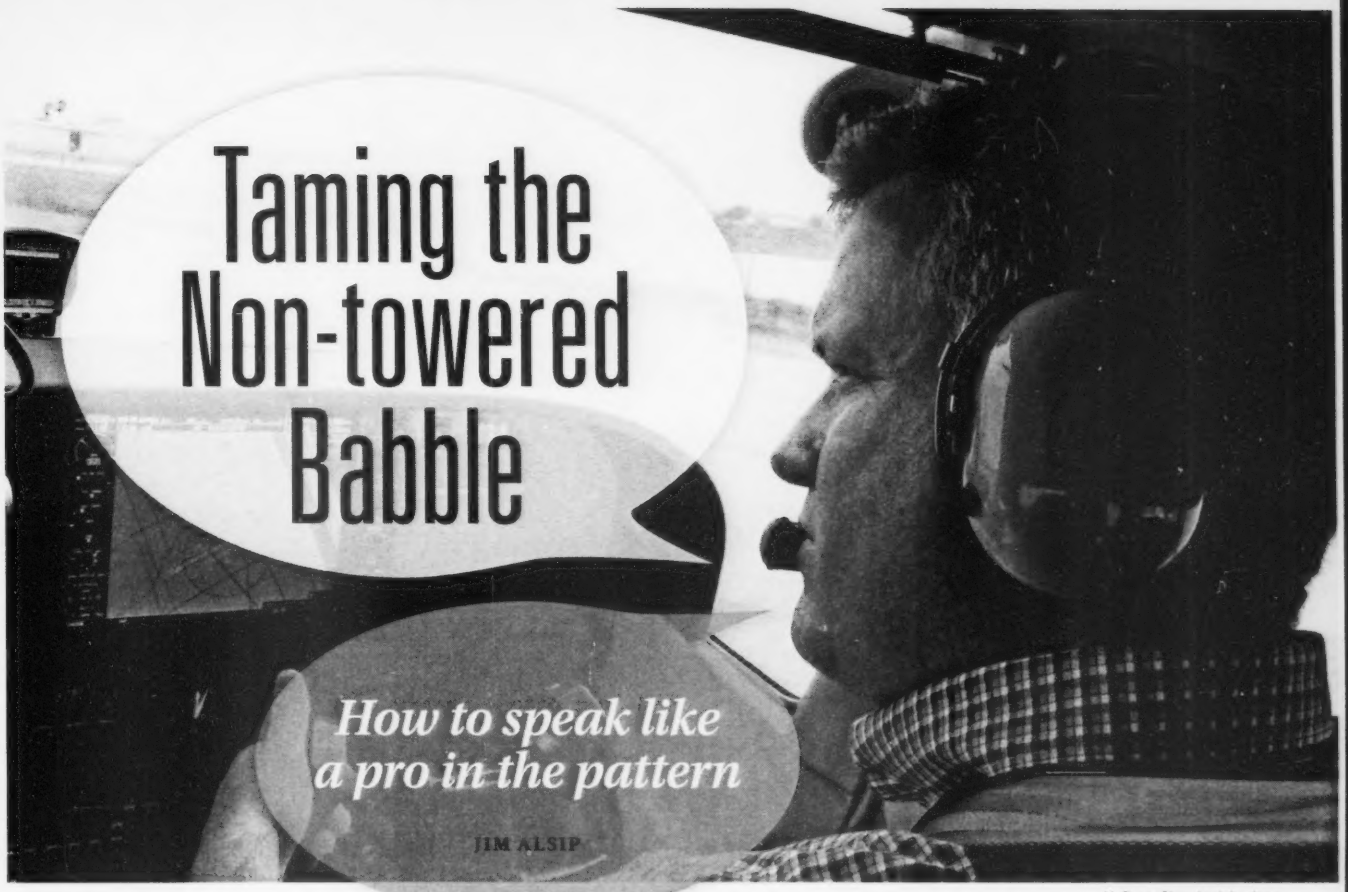
Good health and safe flying!

Dr. Tilton received both an M.S. and a M.D. degree from the University of New Mexico and an M.P.H. from the University of Texas. During a 26-year career with the U.S. Air Force, Dr. Tilton logged more than 4,000 hours as a command pilot and senior flight surgeon flying a variety of aircraft. He currently flies the Cessna Citation 560 XL.

Taming the Non-towered Babble

How to speak like a pro in the pattern

JIM ALSIP



H. Dean Chamberlain photo

Although radio communication is largely optional at many non-towered airports, proper use of this tool is one of the most helpful things a pilot can do to enhance aviation safety. The key, though, is *proper* use. When we babble with extraneous, unclear, or incomplete information, we are misusing the radio and taking time away from pilots who might urgently need to address a dangerous situation. The common traffic advisory frequency (CTAF) is used to assist pilots in identifying where they are in the traffic pattern and is community property for all pilots. Accordingly, we must not only adhere to established rules and recommended procedures, e.g., those set forth in the *Aeronautical Information Manual* (AIM), but we must also be courteous and respectful of our fellow aviators.

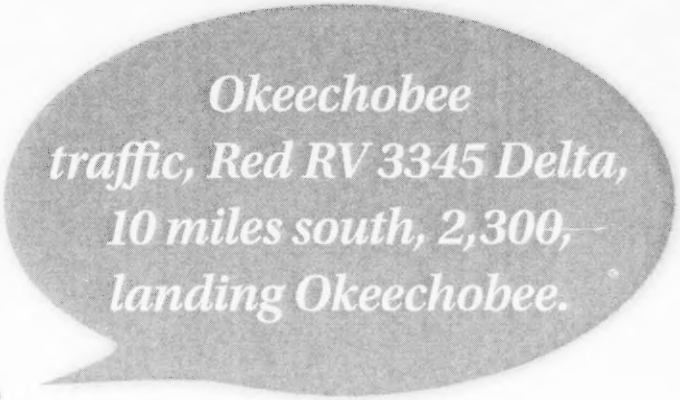
Who, Where, and What

Like any other radio call, your transmission at a non-towered airport should be brief, clear, and, above all, informative. Here are a few tips for meeting these goals.

First, a good radio call in a non-towered Visual Flight Rules (VFR) pattern begins with the name of the airport you are calling and the word "traffic" to address your fellow pilots. Remember that radio transmissions from more than one non-towered airport can be heard on the shared frequency, so repeating the airport name at the end of your transmission saves a lot of confusion. Flying into the airport at Okeechobee, Florida, for example, your radio call typically starts with the words, "Okeechobee traffic," and ends with "Okeechobee."

The second item in a good radio call is self-identification. The AIM (Chapter 4-2-3) recommends transmitting your make, model, and complete "N" number. In a busy non-towered pattern, however, you may wish to supplement this information with a brief description that will help visually identify you to others. For instance, you might say something like, "blue high wing," or "yellow *Cub*."

The third element is to state where you are, so others will know where to look for you. The position report should include both distance and altitude, such as: "seven miles southeast at 2,500." If you are familiar with local procedures, it may be helpful to report your position relative to a known landmark, much as you would use visual checkpoints when establishing two-way radio com-



munications prior to entering Class C airspace. At Indiantown, Florida, a typical call for the VFR pattern might be something like, "three miles west, over the bridge, 3,000."

The last part of a proper radio call is to state your intentions, e.g., "landing Indiantown."

Quiz Time

Now for the quiz! Using the tips we have already discussed, look at the following three sample transmissions and select the radio call that best follows the suggestions provided above:

1. Okeechobee traffic, RV 3345 Delta is 10 miles south of the Okeechobee Airport. We will fly over the airport, then do a tear drop to enter the left downwind for runway 13. Okeechobee.
2. Okeechobee traffic, this is RV45 Delta, 9.6 nautical miles south, 2,300 feet, landing on runway 13 at Okeechobee. (Can you tell that this pilot has a GPS navigator?)
3. Okeechobee traffic, Red RV 3345 Delta, 10 miles south, 2,300, landing Okeechobee.

Ready for the answer? I would choose response number three. Your selection might be different, but I hope it is not number one. Here's why. From 10 miles out, you cannot know the situation at the airport. Even if you did, it could change before you arrive and require you to adjust your pattern entry. Also, the amount of babble in this response fails the brevity test.

Too many pilots think it sounds cool to "take the active," but this transmission violates the prime directive—provide useful information.

Choice two is okay, but the precision of 9.6 nautical miles provides more detail than your fellow aviators need. Think about it this way: If you heard this transmission, would it really make a significant difference in when you expect to see this aircraft in the pattern, or in where you would look in an attempt to spot it? Rounding up to 10 miles, or even rounding down to 9 miles, is fine.

Forbidden Phrases

Here are a few of the "bozo" radio calls I most want to banish from the airwaves. I offer them in good humor, but with the hope they provoke both a smile and a promise to avoid them in your own transmissions.

"Any traffic in the pattern please advise."

We have all heard it, but that doesn't make it right, and it certainly doesn't make it useful. The AIM (Chapter 4-1-9) specifically states that this call "should not be used under any condition." It is also common sense. Consider what would happen if everyone in the pattern responded to this call:

"Aircraft coming in, N3345 is left downwind."

"Aircraft coming in, N152SC, is left downwind, number 3."

"Aircraft coming in, high wing turning base to final."

"Aircraft coming in, Cessna 310 holding short for aircraft on final."

"Ahhhhh, this is the guy coming in, you all stepped on each other, please say again."

The correct technique is to tune your radio to the correct CTAF frequency and then *listen* to develop a mental picture of traffic in and around the pattern.

For More Information

AIM: Chapter 4 – Air Traffic Control

AIM: Pilot/Controller Glossary

AOPA/Air Safety Foundation: "Say It Right" seminar

"Piper 1234, taking the active for departure."

Too many pilots think it sounds cool to "take the active," but this transmission violates the prime directive—provide useful information. Before you make such a transmission, consider how useless it is to an arriving pilot who is listening for information on which runway is in use. By speaking only of "the active," you are contributing to communication clutter by forcing the new arrival to separately request this information. The "taking" phraseology can go, too. To sound like a pro, try this version: "Okeechobee traffic, Piper 1234, departing runway 13, Okeechobee."

Mile-by-mile position reports.

Recently, I flew over a busy airport with a frequency shared by at least two other airports. There was a lot of radio traffic. The pilots of two RVs started to announce themselves about 15 miles out, and they continued to make mile-by-mile position reports for the next five minutes. In between, they exchanged even more detailed position reports with one another. Even worse was the pilot who started announcing his arrival from 12 miles out at 3,500 feet. He made calls every two miles, every 500 feet, and at every turn and position in a full and extended pattern. During this highly celebrated approach, I flew an entire aerobatic sequence, descended to pattern altitude, flew the pattern, landed, and taxied to my hangar. I heard him announce final as I shut down my engine.

Common Sense and Common Courtesy

The next time you fly into a non-towered airport, apply critical thought to your radio techniques and transmissions. You will sound like a pro when you identify yourself, say position and altitude, and state your intentions in as few words as possible. In short, if you have something important to say, say it. Otherwise, listen and learn.

Jim Alsip is a NAFI Master Aerobatic Flight Instructor. His e-mail is isjim@dylanaviation.com

© 2008 Jim Alsip. Written permission from the author required to reprint this copyrighted article.

IFR Operations in the VFR Pattern

In the words of Helen Woods, a Washington, DC, area flight instructor:

"There is nothing more frustrating than to have a pattern full of students on a sunny day when a pilot practicing instrument approaches comes barreling in on an approach, making all of his position calls in IFR terms. If I don't have an approach plate out, I don't even know where he is half the time. What about my poor primary students?

"The purpose of the radio is for communication, and you can't communicate with others unless you are speaking a common language. It is amazing how many high-time pilots and CFIs haven't figured this out. There was actually a 'Safety Talk' given by one of these pilots last summer on "IFR terms that VFR pilots should know," with the sub-text being that "they should know these terms so they can stay out of my way." When I put up my hand and asked how he thought it applied to a 15-hour student pilot, I was told that all student pilots should attend this talk, so they, too, could understand this pilot on the radio and stay out of his way.

"Because I hear this sort of thing on the radio so often, I have to wonder about what instrument pilots are learning when they train. I hope instrument instructors will stress that an approach clearance from ATC when operating in and around a non-towered airport pattern does not constitute permission to abandon the courtesy, common sense, and AIM-recommended practices that help us safely share the skies."

SUSAN PARSON

Checklist

Learning FAAST

You don't have to surf the Internet very much to realize that there is a great deal of aviation safety information available online. The FAA Safety Team (FAASTeam), discussed in Jim Ballough's Jumpseat column, has developed a Web site to help you find what you need. Next time you are navigating cyberspace instead of airspace, type www.FAASafety.gov into your favorite browser and see what's available. Here are just a few of the resources you'll find.

SPANS

The Safety Program Airman Notification System, SPANS, is an online event notification system. If you want to know about FAA-sponsored events and seminars in your area, including events that qualify for credit in the WINGS program, visit FAASafety.gov and sign up to receive e-mail notification of these programs. A preferences page allows you to select the types of notifications you receive through SPANS.

Links

A link labeled "Resources for Pilots" takes you to a convenient and structured electronic portal to some of the online aviation safety resource materials developed by the FAA, other U.S. government agencies, and the private sector. These links are organized according to both subject areas (e.g., "weather") and audience types (e.g., "Airmen-Pilots"). You will find links to aviation safety information located on the FAA corporate Web site (www.faa.gov), Web sites for other U.S. government agencies (e.g., NASA, NTSB, NOAA), or sites developed by educational or non-profit organizations (e.g., Air Safety Foundation or ASF).

Next time you are navigating cyberspace instead of airspace, type www.faasafety.gov into your favorite browser and see what's available.

Learning Center

The Learning Center offers relevant, timely, and high-quality safety content to pilots and aviation maintenance technicians (AMT). It is also intended to provide a portal to valuable aviation safety information located elsewhere in cyberspace.

There are two major components to the Learning Center. The first is an Online Courses catalog. If you are due for a flight review or an instrument proficiency check, you may find it helpful to prepare by taking the relevant online prep course at FAASafety.gov. For instance, the *Flight Review Prep Guide* offers a structured review of the Title 14 Code of Federal Regulations part 91 and *Aeronautical Information Manual* (AIM) material you need to study in preparation for the ground portion of your flight review. The *Instrument Proficiency Check Review Guide* takes a similar approach to helping you review regulations and procedures for flying under Instrument Flight Rules (IFR). If you plan to fly Visual Flight Rules (VFR) within 60 nautical miles of the Washington, DC, metropolitan area, another course you'll want to take is *Navigating the New Washington DC ADIZ*, which satisfies the regulatory requirement mandated by 14 CFR section 91.161, "Special Awareness" training. With winter on the way, still another course to consider is *Inflight Icing*, which is designed to help pilots understand conditions and hazards of inflight icing and develop strategies to minimize inflight icing risks.

The second part of the Learning Center is the online Library, which provides access to a wide range of online aviation safety material. This material includes FAA "P-pamphlets" on a wide range of topics, as well as safety-oriented articles from *FAA Aviation News* and other sources. Learning Center Library content is also searchable.

When it comes to aviation safety, you can never know too much. So check it out. Please let us know what else you'd like to see included.

Susan Parson is a Special Assistant in Flight Standards Service's General Aviation and Commercial Division. She is an active general aviation pilot and flight instructor.

THE PART 139 ADVANTAGE

MICHAEL BROWN

Susan Parson photo

The appeal of general aviation (GA) may be summarized in a single word, "adventure." The ability to visit new places, unencumbered by the constraints of terrestrial movement, makes GA an unrivaled choice for recreational and business-minded aviators alike. Of course, part of that thrill comes from touching down at an airport you've never visited and from the challenge of doing so safely.

Yet, what if your transportation needs lean toward the more mundane? What if instead of weekend getaways, your flying involves transporting paying passengers from one place to another? In such cases, the challenge of a backwoods dirt strip is likely far less appealing than standardized markings, functional lighting, rescue and firefighting capability, and the confidence of knowing the movement areas are inspected daily. In short, you are looking for the safety offered by an airport certificated by the FAA under Title 14 Code of Federal Regulations (14 CFR) part 139.

Certification of Airports

The U.S. air transportation system boasts the most expansive and diverse network of airports found anywhere in the world. However, of the nearly 20,000 landing facilities and more than 5,000 public-use airports nationwide, only 567 are certificated by the FAA. These airports, as a condition of their certification, are required to meet the standards outlined in 14 CFR part 139.

So, when does an airport need to be certificated by the FAA? If an airport wishes to host scheduled passenger-carrying operations using aircraft with more than nine passenger seats or an unscheduled passenger-carrying operation using an aircraft with more than 30 passenger seats, it must be certificated under part 139.

The term "certificated airport" conjures images of facilities such as Chicago's O'Hare International Airport, Los Angeles International Airport, or Atlanta Hartsfield, and indeed these are all part 139 certificated airports. However, a significant number of part 139-airports serve only a handful of commercial operations each day. These are the certificated airports most likely to serve general aviation pilots. While you may not be involved in any commercial flight activities, you can certainly benefit from the added measure of safety that results from the certification process.

New technologies that will make airports safer include enhanced markings, runway status lights, advanced radar systems, and enhanced materials arresting systems (EMAS).

For example, all certificated airports are required to have an *Airport Certification Manual*, or ACM, that is approved by the FAA. Section 139.203 of 14 CFR outlines the required contents and includes items such as self-inspection procedures, procedures to ensure safety during construction, and procedures for controlling pedestrians and vehicles in the movement area. While non-certificated airports may have similar processes, the required degree of formality and the scrutiny these procedures face are significantly greater for airports certificated under part 139.

Safety Advantages

In addition, there are a number of other requirements under part 139 that offer pilots safety

Michael W. Brown photo

advantages. The availability of airport rescue and firefighting (subject to the requirements of part 139) is one example. Another example, which is of great benefit to many northern-tier pilots, is that airports are required to have a snow and ice control plan. Any pilot who has had to scrub a flight on a sunny winter's morning due to lingering ice and snow can attest to the value of such a plan. Also, unlike many non-certificated airports that simply broadcast messages warning pilots of "deer and waterfowl in the vicinity of the airport," certificated airports meeting certain criteria must also have in place a wildlife hazard management plan. When you consider the possible damage resulting from a wildlife strike, this additional measure can offer great peace of mind.

The availability of airport rescue and firefighting capability is just one advantage of certificated airports.

Operational Considerations

There are many other operational and safety benefits offered by the airport certification process. The establishment of standardized runway safety areas, stringent lighting and marking standards, and formalized training of airport personnel all contribute greatly to the increased level of safety enjoyed at these airports. However, as with all other components of the safety equation, safety relies heavily on the relationship between the regulator and regulated parties. The airport community collectively does an excellent job maintaining high standards. To ensure those standards are maintained in accordance with part 139, the FAA employs a small, but dedicated, staff of airport certification safety inspectors who annually inspect each of the nation's 567 part 139 airports.

The first and most important goal of the FAA's certification program is to protect the traveling public by ensuring the safest environment possible for aircraft surface operations. Part of this task involves internal quality control by the airport and part of it involves effective regulatory oversight. As with all regulatory programs, there is also a policy element that contributes to the overall safety mission. This requires the ongoing analysis of incidents, accidents, violation histories, and more. The goal is to make sure FAA regulations and policies are targeted to achieve a maximum level of safety. Finally, airport safety involves ongoing research to identify and deploy new technologies to improve safety. This includes enhanced markings, runway status lights, advanced radar systems, and Engineered Materials Arresting Systems (EMAS), to name just a few. The FAA's commitment to developing and impiementing new technologies at commercial service airports ensures that the highest levels of safety will be maintained, especially with the anticipated growth in air traffic.

Other Airports

While this description is intended to highlight the safety benefits resulting from the part 139 certification process, it is not a condemnation of airports that are not certificated. In fact, many of the non-certificated airports serving general aviation receive federal funding and, as a result of accompanying grant assurances, conform to many of the standards prescribed by the FAA. As a pilot, it falls to you to determine what challenges may be posed by operating into and out of a given airport. The advantage offered by part 139 is that many of the safety of flight concerns you may have when operating into a backwoods airstrip simply disappear thanks to the FAA's regulatory framework. Regardless of whether you are perched in the "front office" or seated back in coach, rest assured you are benefitting from a robust safety-focused system.

For more information, please visit the Airports section of the FAA Web site: http://www.faa.gov/airports_airtraffic/airports/airport_safety/part139_cert/

Michael Brown, an active general aviation pilot, is manager of the FAA's Airport Safety and Operations Division.

Index of Articles 2007 – 2008

AEROMEDICAL

Aeromedical Advisory

Curbing Carbon Monoxide	Nov/Dec 2008
Help Us Help You	Mar/Apr 2008
Pilots Are Welcome Here	Jul/Aug 2008
Smoke Gets in Your Eyes	Sep/Oct 2008
Welcome Aboard MedXPress	May/Jun 2008

Carbon Monoxide

'Tis the Season…to Check your Exhaust Carefully	Nov/Dec 2007
Where There's Smoke…	Sep/Oct 2008

Helicopter Emergency Medical Service (HEMS)

New Helicopter Emergency Medical Services Weather Tool	Jan/Feb 2007

History

A Brief History of Aviation Medicine	Mar/Apr 2008

Internet

Medical Stuff: Is FAA's Web-based Technology Investment Justified?	Jan/Feb 2007

Laser Eye Surgery

Information for Pilots Considering Laser Eye Surgery	Jan/Feb 2008

Medical Certificate

FAA Extends Duration of First- and Third-Class Medical Certificate	Sep/Oct 2008

Medical Stuff

Is FAA's Web-based Technology Investment Justified?	Jan/Feb 2007
Why I Became an AME	May/Jun 2007

Noise

InFo: Noise Attenuation Properties of Noise-Canceling Headsets	Nov/Dec 2007

Survival

Aeromedical Advisory: Smoke Gets in Your Eyes	Sep/Oct 2008
Defeating Dehydration	Mar/Apr 2008
Prepared for Anything	Nov/Dec 2007
Search and Rescue	Nov/Dec 2007
Sparky's Lessons Learned	Jan/Feb 2008
Winter Flight Safety	Jan/Feb 2007

Wellness

From the Logbook: Limits as Pilots and the Aircraft We Fly	Jan/Feb 2007

AIR TRAFFIC

ADS-B

ADS-B in the Gulf of Mexico	Jan/Feb 2008

ASRS

ASRS GA Weather Encounters: IFR into IMC	Sep/Oct 2007
NASA's Aviation Safety Reporting System Turns 30	Jan/Feb 2007
Memorial of a Different Kind	Jan/Feb 2007
Vacuum Failures Can Hurt or What I Learned Reading ASRS Reports	Nov/Dec 2007

Charts

"A TAC" of the Charts	May/Jun 2008

Communications

Taming the Non-Tower Babble	Nov/Dec 2008

Commercial Space

Integrating Space Traffic into the National Airspace System	Nov/Dec 2007

Flight Service Station (FSS)

A More Efficient Flight Service for the 21st Century	Jul/Aug 2007
Painless Pilot Weather Briefing	Jul/Aug 2008

Jobs

New VA/FAA Program Expands Opportunities for our Nation's Heroes	May/Jun 2007

National Airspace System

Integrating Space Traffic into the National Airspace System	Nov/Dec 2007

NOTAMs

Checklist: Know Your NOTAMs: Introducing the New "Super D"	Jan/Feb 2008
Editor's Runway: NOTAMs and Charts	Mar/Apr 2007
The "D" NOTAM Brochure	Jan/Feb 2008
Don't Be Shut Out	Jan/Feb 2008

PIREPS

Pipe Up with PIREPs	May/Jun 2008

Temporary Flight Restrictions (TFR)

At Ease in the ADIZ: Flying in the Washington, DC, Metropolitan Area	Sep/Oct 2007
Don't Be Shut Out	Jan/Feb 2008
Fire Zone TFRs	May/Jun 2007
TFR Taxonomy	Sep/Oct 2008

Tower

Phoenix Rising: Deer Valley ATCT	May/Jun 2007
Step by Step: Teach Emergencies with the ABCs	May/Jun 2008

Wide Area Augmentation System (WAAS)

Editor's Runway: L-phabet Soup	Sep/Oct 2008
How Do I Get a WAAS LPV Approach?	Sep/Oct 2007
Pilot Orientation Guide to Using the WAAS	Jul/Aug 2007
WAAS, Another Great Reason to Update Your Charts	Mar/Apr 2007
WAAS: Bigger, Better, Lower, and More	Mar/Apr 2008

AIRCRAFT

Accidents

Flight Controls, Maintenance, and Fresh Warm Air—What Could Go Wrong?	May/Jun 2007
Midair	May/Jun 2007
Sparky's Lessons Learned	Jan/Feb 2008
Teaching the Teachers	Jan/Feb 2008
Where There's Smoke	Sep/Oct 2008

Ballistic Parachute Recovery System (BRS)

General Aviation and the Moon Landing	Sep/Oct 2007

Experimental

Experimental Flight Training for Hire or Compensation	Mar/Apr 2008
Hot Spots: Experimental vs Type Certificated Aircraft	Nov/Dec 2008

Glider

Midair	May/Jun 2007

Helicopter

New Helicopter Emergency Medical Services Weather Tool	Jan/Feb 2007

Light Sport Aircraft

Checklist: Ready to Copy	Jul/Aug 2008
Sport Pilot: January 31, 2008, and What It Means to Light-Sport Aircraft and Repairmen	Mar/Apr 2007
Sport Pilot: What Really Happened to a Transitioning Ultralight Pilot on January 31, 2007?	Mar/Apr 2007
Sport Pilot: What Really Happens to your Transitioning Two Place Ultralight Trainer on January 31, 2008	Jul/Aug 2007

Seaplane

The Legend of Lake Winnebago	Jul/Aug 2008

Technically Advanced Aircraft (TAA)

Beyond the Buttons: Mastering our Marvelous Flying Machines	Mar/Apr 2007
FAA TAA Inspector Training	May/Jun 2007
Technology in the Cockpit	Mar/Apr 2007

Twin

From the Logbook: Owning Your First Twin	Sep/Oct 2007

Warbird

The Anatomy of a Warbird Type Rating	Mar/Apr 2007
Warbirds and Operating Limitations	Sep/Oct 2007

AIRPORTS

Part 139

Airports—The Part 139 Advantage	Nov/Dec 2008

Runway/Taxiway

Airport Sign Quiz	May/Jun 2008
Be Part of the Solution at West Palm Beach Airport (PBI)	Mar/Apr 2007
Checklist: Getting Around on the Ground	Mar/Apr 2008
FAASTeam Discovers Safety Hazards at Palm Beach International	Jan/Feb 2007
Hot Spots: Tips on TIPH	Jul/Aug 2008
The Last Link in the Chain	Nov/Dec 2007
Runway Safety	Jan/Feb 2008
Runway Safety Corner: Situational Awareness	Jan/Feb 2007
Surface Safety	Nov/Dec 2008
Take Off from the Taxiway	Jan/Feb 2008
Where Are You?	Nov/Dec 2007

DEPARTMENTS

Aeromedical Advisory

Curbing Carbon Monoxide	Nov/Dec 2008
Help Us Help You	Mar/Apr 2008
Pilots Are Welcome Here	Jul/Aug 2008
Smoke Gets in Your Eyes	Sep/Oct 2008
Welcome Aboard MedXPress	May/Jun 2008

Aviation Maintenance Alerts

Aviation Maintenance Alerts	Jan/Feb 2007
Aviation Maintenance Alerts	Sep/Oct 2007
Aviation Maintenance Alerts	Nov/Dec 2007

Aviation Maintenance Alerts	Jan/Feb 2008
Aviation Maintenance Alerts	Mar/Apr 2008
Aviation Maintenance Alerts	May/Jun 2008
Aviation Maintenance Alerts	Jul/Aug 2008
Aviation Maintenance Alerts	Sep/Oct 2008
Aviation Maintenance Alerts	Nov/Dec 2008

Checklist

Getting Around on the Ground	Mar/Apr 2008
Know Your NOTAMS: Introducing the New "Super D"	Jan/Feb 2008
Learning FAAST	Nov/Dec 2008
"License" to Learn?	May/Jun 2008
Ready to Copy	Jul/Aug 2008
Safety Information	Sep/Oct 2008

Editor's Runway

Are You Ready for the New Flying Season?	Mar/Apr 2008
End of the Year Thoughts	Nov/Dec 2007
Good Bye	Jul/Aug 2008
Hello, I Am Glad You Found Me	Jan/Feb 2008
L-phabet Soup	Sep/Oct 2008
New Direction	May/Jun 2008
NOTAMs and Charts	Mar/Apr 2007
Renewal Notices and Approaching Deadline	Jul/Aug 2007
Saying Goodbye	Sep/Oct 2007
Start the New Year Off Right	Jan/Feb 2007
Time to Share	May/Jun 2007
'Tis the Season	Nov/Dec 2008

FAA Faces

Don Dodge: FAASTeam, National Resource Center	Nov/Dec 2008
Rich Mileham: FAASTeam, Great Lakes Region	Jul/Aug 2008
Kathleen O'Brien: FAASTeam, Western Pacific Region	May/Jun 2008
Dan Petersen: ASI, Lincoln (NE) FSDO	Jan/Feb 2008
Peter Rouse: Small Aircraft Directorate	Sep/Oct 2008
Obie Young: FAASTeam, National Resource Center	Mar/Apr 2008

Hot Spots

Experimental Vs Type Certificated Aircraft	Nov/Dec 2008
Tips on TIPH	Jul/Aug 2008
When Bad Things Happen to Good Pilots	Sep/Oct 2008

Jumpseat

"Be Careful Out There"	May/Jun 2008
Cultivating Targeted Safety Solutions	Nov/Dec 2008
Fifty Years of Improving Safety	Jul/Aug 2008
Safety Begins with You	Mar/Apr 2008
We Are Here to Help You	Sep/Oct 2008

Medical Stuff

Is FAA's Web-based Technology Investment Justified?	Jan/Feb 2007
Why I Became an AME	May/Jun 2007

Nuts, Bolts, and Electrons

Are You Legal?	Mar/Apr 2008
Battery Protection and Precautions	Jul/Aug 2008
Hazardous Material in Checked and Carry-on Baggage	Jul/Aug 2008
Ready or Not? Part 1	Sep/Oct 2008
Ready or Not? Part 2	Nov/Dec 2008
Rebuilt or Overhauled—What is the Difference?	May/Jun 2008

Sport Pilot

January 31, 2008, and What It Means to Light-Sport Aircraft and Repairmen	Mar/Apr 2007
What Really Happened to a Transitioning Ultralight Pilot on January 31, 2007?	Mar/Apr 2007
What Really Happens to your Transitioning Two Place Ultralight Trainer on January 31, 2008	Jul/Aug 2007

INSTRUCTION

Flight Instructor Refresher Course (FIRC)

The Changing Face of the FIRC	Jul/Aug 2007

FAA/Industry Training Standards (FITS)

FITS and Learner Centered Grading, FITS part 4	Mar/Apr 2007
Scenario-based Practical Test Standards	Jan/Feb 2008

Integrated Airman Certificate and/or Rating Application (IACRA)

IACRA (Eye ACK' Rah)	Sep/Oct 2007

Pilot Education

13 Tips to Keep You Flying Safely	Jul/Aug 2008
The Anatomy of a Warbird Type Rating	Mar/Apr 2007
The Cheapest Insurance, Part 1: Reasons for an Instrument Rating	Mar/Apr 2008
The Cheapest Insurance, Part 2: Adding an Instrument Rating	May/Jun 2008
Checklist: Learning FAAST	Nov/Dec 2008
Count Down to Spring	Jan/Feb 2008
Experimental Flight Training for Hire or Compensation	Mar/Apr 2008
FAASTeam CFI Workshops	Sep/Oct 2008
A Five-Minute Review	Jan/Feb 2008
How Do I Get There from Here?	Jan/Feb 2007
How Do They Do That? The Art of (Safe) Formation Flying	Mar/Apr 2008
How We Learn	Sep/Oct 2008
Learning to Fly in Weather	May/Jun 2008
Planning a Flying Workshop	May/Jun 2008
Sparky's Lessons Learned	Jan/Feb 2008
Teach Emergencies with the ABCs	May/Jun 2008
Step by Step: Teaching the Teachers	Jan/Feb 2008
Warbirds and Operating Limitations	Sep/Oct 2007
What Not to Learn	Sep/Oct 2008
Would You Teach This Man to Fly?	Mar/Apr 2007

Technically Advanced Aircraft (TAA)

Beyond the Buttons: Mastering our Marvelous Flying Machines	Mar/Apr 2007
FAA TAA Inspector Training	May/Jun 2007
Technology in the Cockpit	Mar/Apr 2007

MAINTENANCE/AVIONICS

Accidents

Flight Controls, Maintenance, and Fresh Warm Air—What Could Go Wrong?	May/Jun 2007
Vacuum Failures Can Hurt or What I Learned Reading ASRS Reports	Nov/Dec 2007

Air Tanks

Compressed Gas Is Not for Wimps	Jan/Feb 2007

Autogas

Special Airworthiness Information Bulletin: Alcohol Present in Autogas Used for GA Airplanes	Jan/Feb 2007
What Not to Burn	Sep/Oct 2008

Aviation Maintenance Alerts

Aviation Maintenance Alerts	Jan/Feb 2007
Aviation Maintenance Alerts	Sep/Oct 2007
Aviation Maintenance Alerts	Nov/Dec 2007
Aviation Maintenance Alerts	Jan/Feb 2008
Aviation Maintenance Alerts	Mar/Apr 2008
Aviation Maintenance Alerts	May/Jun 2008
Aviation Maintenance Alerts	Jul/Aug 2008
Aviation Maintenance Alerts	Sep/Oct 2008
Aviation Maintenance Alerts	Nov/Dec 2008

Avionics

ADS-B in the Gulf of Mexico	Jan/Feb 2008

Batteries

Battery "Bewareness"	Jul/Aug 2007
Nuts, Bolts & Electrons: Battery Protection and Precautions	Jul/Aug 2008
Nuts, Bolts & Electrons: Hazardous Material in Checked and Carry-on Baggage	Jul/Aug 2008

Ballistic Parachute Recovery System (BRS)

General Aviation and the Moon Landing	Sep/Oct 2007

Emergency Locator Transmitter (ELT)

One Year and Counting	Jan/Feb 2008
Prepared for Anything	Nov/Dec 2007
SARSAT – A Lifeline to Survival	Nov/Dec 2007
Search and Rescue	Nov/Dec 2007

Engines

Nuts, Bolts, & Electrons: Rebuilt or Overhauled—What Is the Difference?	May/Jun 2008

Exhaust

Tis the Season...to Check Your Exhaust Carefully	Nov/Dec 2007

Light Sport Aircraft

Checklist: Ready to Copy	Jul/Aug 2008
Nuts, Bolts, and Electrons: Ready or Not? Part 1	Sep/Oct 2008
Nuts, Bolts, and Electrons: Ready or Not? Part 2	Nov/Dec 2008
Sport Pilot: January 31, 2008, and What It Means to Light-Sport Aircraft and Repairmen	Mar/Apr 2007

Nuts, Bolts, and Electrons

Are You Legal?	Mar/Apr 2008
Battery Protection and Precautions	Jul/Aug 2008
Hazardous Material in Checked and Carry-on Baggage	Jul/Aug 2008
Ready or Not?, Part 1	Sep/Oct 2008
Ready or Not? Part 2	Nov/Dec 2008
Rebuilt or Overhauled—What Is the Difference?	May/Jun 2008

Technically Advanced Aircraft (TAA)

Beyond the Buttons: Mastering our Marvelous Flying Machines	Mar/Apr 2007
Have You Checked Your Data?	May/Jun 2007
Technology in the Cockpit	Mar/Apr 2007

Weight and Balance

Beyond the $100 Hamburger: Flying Vacation Preparedness	May/Jun 2007
Weight and Balance—And the Answers Are	Jan/Feb 2008
Weight and Balance—How Much Is Too Much?	Nov/Dec 2007

MISCELLANEOUS

Awards

2007 National General Aviation Award Winners Named	Jul/Aug 2007
2008 National General Aviation Awards: And the Winners Are...	Jul/Aug 2008
Wright Brothers "Master Pilot" Awardees	May/Jun 2007

FAA

Behind the Scenes	Jul/Aug 2008
Central American Agency for Aeronautical Safety Visits FAA's Southern Region	Nov/Dec 2007
Checklist: Learning FAAST	Nov/Dec 2008
FAASTeam Discovers Safety Hazards at Palm Beach International	Jan/Feb 2007
If We Knew What We Were Doing, It Wouldn't Be Research (Flight Test Program)	Jul/Aug 2007
Meet the FAA	Jul/Aug 2008
New VA/FAA Program Expands Opportunities for our Nation's Heroes	May/Jun 2007
Small Is Beautiful: FAA's Small Airplane Directorate	Sep/Oct 2008

Index

Index of Articles 2007 – 2008	Nov/Dec 2008

Personalities

Dr. Louis Hopewell Bauer: A Brief History of Aviation Medicine	Mar/Apr 2008
Dr. Paul MacCready, 1925 – 2007	Nov/Dec 2007

Special Events

Air Venture® 2007	Jul/Aug 2007
Balloon Fiesta® 2007 "Rainbow Skies"	Sep/Oct 2007
Behind the Scenes	Jul/Aug 2008
Launching Dreams	Sep/Oct 2008
Meet the FAA	Jul/Aug 2008
Ready for Reno?	Jul/Aug 2008

Reno 2007	Jul/Aug 2007
Smithsonian National Air and Space Museum Opens New Exhibit—America by Air	Jan/Feb 2008
Sun 'n Fun® 2007	Mar/Apr 2007
Sun 'n Fun® 2008 Getting There Safely	Mar/Apr 2008

Youth

Angels of Aviation	Sep/Oct 2007
Creating Aviation's Next Generation	May/Jun 2008
Young Eagles Flight Education	Jul/Aug 2008
Youth Aviation Adventure	Sep/Oct 2008

OPERATIONS/PILOT TECHNIQUES

Accidents

Hot Spots: Experimental vs Type Certificated Aircraft	Nov/Dec 2008
The Last Link in the Chain	Nov/Dec 2007
Midair	May/Jun 2007
Sparky's Lessons Learned	Jan/Feb 2008
Teaching the Teachers	Jan/Feb 2008

Bahamas

Mid-Winter Escapes by Air	Jan/Feb 2008

Birds

Beware of Birds and Wildlife	Sep/Oct 2007

Ballistic Parachute Recovery System (BRS)

General Aviation and the Moon Landing	Sep/Oct 2007

Communications

Taming the Non-towered Babble	Nov/Dec 2008

Density Altitude

Into Thin Air: Density Altitude and Aircraft Performance	Mar/Apr 2007

Formation Flying

How Do They Do That?	Mar/Apr 2008

Instrument Flight Rules (IFR)

ADS-B in the Gulf of Mexico	Jan/Feb 2008
ASRS GA Weather Encounters: VFR into IMC	Sep/Oct 2007
The Cheapest Insurance, Part 1: Reasons for an Instrument Rating	Mar/Apr 2008
The Cheapest Insurance, Part 2: Adding an Instrument Rating	May/Jun 2008
General Aviation Weather Encounters: VFR into IMC	Sep/Oct 2007

Mountain Flying

Beyond the $100 Hamburger: Flying Vacation Preparedness	May/Jun 2007

Night Flight

Blackout	Nov/Dec 2008
Shedding Light on Night Flight	Nov/Dec 2008

Operating Limitations

Warbirds and Operating Limitations	Sep/Oct 2007

Overwater

The Legend of Lake Winnebago	Jul/Aug 2008

PIREPS

Pipe Up with PIREPs	May/Jun 2008

Preflight

13 Tips to Keep You Flying Safely	Jul/Aug 2008
"A TAC" of the Charts	May/Jun 2008
Beyond the $100 Hamburger: Flying Vacation Preparedness	May/Jun 2007
But I Fly a Rotax Engine!	Nov/Dec 2007
Checklist: Know Your NOTAMs: Introducing the New "Super D"	Jan/Feb 2008
Cold Starts	Nov/Dec 2007
The "D" NOTAM Brochure	Jan/Feb 2008
From the Logbook: Limits as Pilots and the Aircraft We Fly	Jan/Feb 2007
General Aviation Passenger SAFETY Briefing	Jan/Feb 2007
Have You Checked Your Data?	May/Jun 2007
Mid-Winter Escapes by Air	Jan/Feb 2008
Now Why Didn't I Think of That?	May/Jun 2008
Painless Pilot Weather Briefing	Jul/Aug 2008
Passenger Safety Briefing Checklist	Sep/Oct 2008
Pilot in Command on the Ground	Mar/Apr 2008
A Tale of Two Diverts	Jan/Feb 2007
Transit Traps: Avoiding Misadventure En Route	Jul/Aug 2008
Weight and Balance—And the Answers Are	Jan/Feb 2008
Weight and Balance—How Much Is Too Much?	Nov/Dec 2007
Winter Flight Safety	Jan/Feb 2007

Runway/Taxiway

Be Part of the Solution at West Palm Beach Airport (PBI)	Mar/Apr 2007
FAASTeam Discovers Safety Hazards at Palm Beach International	Jan/Feb 2007
Checklist: Getting Around on the Ground	Mar/Apr 2008
Hot Spots: Tips on TIPH	Jul/Aug 2008
The Last Link in the Chain	Nov/Dec 2007
Pilot in Command on the Ground	Mar/Apr 08
Runway Safety	Jan/Feb 2008
Runway Safety Corner: Situational Awareness	Jan/Feb 2007
Take Off from the Taxiway	Jan/Feb 2008
Where Are You?	Nov/Dec 2007

Survival

Aeromedical Advisory: Smoke Gets in Your Eyes	Sep/Oct 2008
Beyond the $100 Hamburger: Flying Vacation Preparedness	May/Jun 2007
Defeating Dehydration	Mar/Apr 2008
General Aviation Passenger SAFETY Briefing	Jan/Feb 2007
Prepared for Anything	Nov/Dec 2007
SARSAT – A Lifeline to Survival	Nov/Dec 2007
Search and Rescue	Nov/Dec 2007
Sparky's Lessons Learned	Jan/Feb 2008
Teaching the Teachers	Jan/Feb 2008

Where There's Smoke	Sep/Oct 2008
Winter Flight Safety	Jan/Feb 2007

Technically Advanced Aircraft (TAA)

Beyond the Buttons: Mastering our Marvelous Flying Machines	Mar/Apr 2007
Have You Checked Your Data?	May/Jun 2007
Technology in the Cockpit	Mar/Apr 2007

Temporary Flight Restrictions (TFR)

At Ease in the ADIZ: Flying in the Washington, DC, Metropolitan Area	Sep/Oct 2007
Don't Be Shut Out	Jan/Feb 2008
Fire Zone TFRs	May/Jun 2007
TFR Taxonomy	Sep/Oct 2008

Wide Area Augmentation System (WAAS)

How Do I Get a WAAS LPV Approach?	Sep/Oct 2007
Pilot Orientation Guide to Using the WAAS	Jul/Aug 2007
WAAS, Another Great Reason to Update your Charts	Mar/Apr 2007
WAAS: Bigger, Better, Lower, and More	Mar/Apr 2008

Wildlife

Birds, Bees, and Baleen Whales	May/Jun 2008

Winter

But I Fly a Rotax Engine!	Nov/Dec 2007
Cold Starts	Nov/Dec 2007
FAA Fact Sheet: Safer Flying in Icing Conditions	Jan/Feb 2008
Icing – Hope Is Not a Strategy	Nov/Dec 2007
Winter	Sep/Oct 2007
Winter Flight Safety	Jan/Feb 2007

REGULATIONS

Canada

The FAA-Transport Canada Pilot Licensing Agreement	Mar/Apr 2007

Enforcement

Hot Spots: When Bad Things Happen to Good Pilots	Sep/Oct 2008

Flight Standards Information Management System (FSIMS)

Oh No, Not Another Acronym!	Nov/Dec 2007

Light Sport Aircraft

Checklist: Ready to Copy	Jul/Aug 2008
Sport Pilot: January 31, 2008, and What It Means to Light-Sport Aircraft and Repairmen	Mar/Apr 2007
Sport Pilot: What Really Happened to a Transitioning Ultralight pilot on January 31, 2007?	Mar/Apr 2007
Sport Pilot: What Really Happens to your Transitioning Two Place Ultralight Trainer on January 31, 2008	Jul/Aug 2007

Part 61

Checklist: "License" to Learn?	May/Jun 2008

Part 91

Experimental Flight Training for Hire or Compensation	Mar/Apr 2008

Part 139

Airport—The Part 139 Advantage	Nov/Dec 2008

Regulations

A Five-Minute Review	Jan/Feb 2008
Birds, Bees, and Baleen Whales	May/Jun 2008
Checklist: Ready to Copy	Jul/Aug 2008
Meet the FAA	Jul/Aug 2008

WEATHER

Briefings

Checklist: Know Your NOTAMs: Introducing the New "Super D"	Jan/Feb 2008
Painless Pilot Weather Briefing	Jul/Aug 2008

Density Altitude

Into Thin Air: Density Altitude and Aircraft Performance	Mar/Apr 2007

Instrument Flight Rules (IFR)

ADS-B in the Gulf of Mexico	Jan/Feb 2008
ASRS GA Weather Encounters: VFR into IMC	Sep/Oct 2007
The Cheapest Insurance, Part 1: Reasons for an Instrument Rating	Mar/Apr 2008
The Cheapest Insurance, Part 2: Adding an Instrument Rating	May/Jun 2008
General Aviation Weather Encounters: VFR into IMC	Sep/Oct 2007
Learning to Fly in Weather	May/Jun 2008
New Helicopter Emergency Medical Services Weather Tool	Jan/Feb 2007
A Tale of Two Diverts	Jan/Feb 2007
Transport Traps: Avoiding Misadventures En Route	Jul/Aug 2008

Technically Advanced Aircraft (TAA)

Technology in the Cockpit	Mar/Apr 2007

Winter

But I Fly a Rotax Engine!	Nov/Dec 2007
Cold Starts	Nov/Dec 2007
FAA Fact Sheet: Safer Flying in Icing Conditions	Jan/Feb 2008
Icing – Hope Is Not a Strategy	Nov/Dec 2007
Winter	Sep/Oct 2007
Winter Flight Safety	Jan/Feb 2007

We have a limited number of back issues in stock. If you see an article from a past issue that you would like to receive, contact us at (202) 493-4958 or e-mail AviationNews@faa.gov.

KENNETH J. MACDONALD

Surface Safety

James Williams photo

You Can Make a Difference

Runway incursions are rare events, but every single one has the potential for catastrophic consequences. Some of aviation's worst disasters have been caused by runway incursions. The most notable was the collision of the two Boeing 747 aircraft on the island of Tenerife on March 27, 1977. There were 583 fatalities.

From fiscal year 2000 through fiscal year 2003 in the United States, runway incursions resulted in seven collisions at towered airports. From fiscal year 2002 through 2007, pilot deviations were the causes of 1,106 out of a total of 2,015 runway incursions, or 55 percent of the total. Pilot error is the major cause of runway incursions in the United States.

If we look at this issue in a positive way, we can see that pilots have a tremendous opportunity to reduce runway incursions. If we can prevent even one serious accident, the effort will have been worthwhile. So let's look at how you, as a pilot, can make a difference.

Defining the Problem

Why are pilots causing 55 percent of all runway incursions? Why did the percentage climb even higher in 2008? What exactly is a runway incursion? The original FAA definition included a requirement for "loss of required separation," defined as less than one mile. In order to standardize the definition, the International Civil Aviation Organization (ICAO) published a new definition that went into effect November 2004. The FAA transitioned to this new definition in 2007. It states that a runway incursion is:

Any occurrence at an aerodrome [airport] involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of an aircraft.

This change caused many of what were called surface incidents to be defined as runway incursions. The change in definition had the effect of increasing the number of incursions (see figure below).

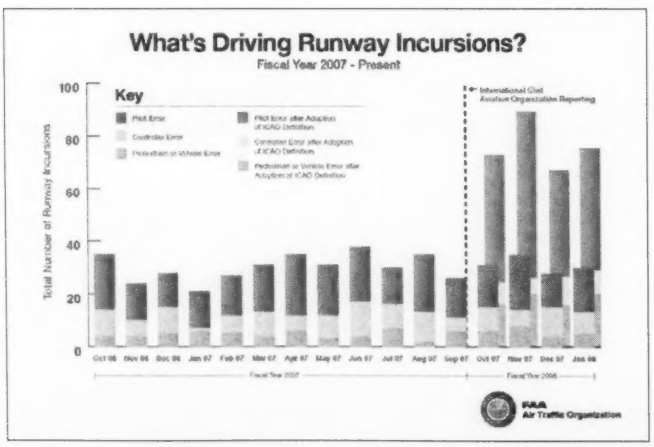
Whatever the definition, the facts remain that accidents caused by close encounters on the airport surface have horrific consequences and pilot deviations have been the cause of more than 50 percent of them. Let's examine a few runway incursions to see what pilots can do to prevent them.

Short-term Memory Deficits

The number one cause of runway incursions: Pilots who enter the runway or cross the hold-short line after acknowledging hold-short instructions. A pilot is instructed to taxi to runway 27 via taxiways C and D, hold-short of runway 33. The pilot acknowledges the hold-short instruction, but enters runway 33 and causes a landing aircraft to go around. What happened?

Humans are constantly picking up information from many sources. While we are processing one piece of information, other items are sent to short-term memory, which will only hold it for 10 to 20 seconds. Unless we actively rehearse it, the information will be forgotten. The end result is that the pilot in the example read back the clearance to hold short, but the information was replaced by something more pertinent to him/her at the time.

One mitigation for memory loss is to write down the taxi clearance before moving the aircraft. Another way to ensure that we stop before entering the runway is to develop the habit of hesitating when approaching any runway. Slow down and ask yourself, "Am I cleared to enter this runway?" If there is even the slightest doubt, stop and ask the controller for clarification.



Distractions

A pilot was instructed to taxi to runway 9 via taxiways A and B. When the aircraft reached taxiway B, the pilot continued on taxiway A and ended up going out onto the active runway in front of a landing jet that had to go around. An investigation revealed that the pilot was inputting data to the GPS unit while taxiing. The pilot was distracted from the primary duty of taxiing the aircraft.

It is extremely important to pay strict attention to what is going on around us and to know exactly where you are relative to your planned taxi route. To eliminate distractions as a factor in causing a runway incursion, remember that taxiing an aircraft is a critical phase of flight. Consequently, you must avoid duties that take your attention away from this primary task. Taxiing an aircraft is not the time to hold a conversation, enter data into a navigation system, or run a checklist. Prioritize your tasks and maintain vigilance whenever you are moving on the airport surface. When performing a secondary task while trying to taxi the aircraft, you may not see the runway hold position sign or

James Williams photo

the runway hold position marking and enter the runway safety area causing a runway incursion.

Disorientation

Pilots sometimes cause runway incursions because they are unfamiliar with an airport, and/or with the signs and markings used on airports. Pilots have a responsibility to know and understand the signs and markings used at airports and to have and use a current airport taxi diagram. Many resources are available to help. Airport diagrams that show taxiways and runways are available on the FAA Runway Safety Web site (www.faa.gov/runwaysafety), the Aircraft Owners and Pilots Association (AOPA) Web site, (www.aopa.org), and on the Jeppesen Approach Plates. The AOPA Runway Safety Training Program is also available on both Web sites.

Use the airport diagram when moving on the surface of an airport. If you are expecting a complex taxi clearance, write it down. It is much easier to taxi if you understand the route. If you still have questions, ask the controller for progressive taxi instructions. Controllers are ready and willing to help you.

Another example of disorientation comes from pilots who have landed on taxiways. Wide taxiways that parallel runways are particularly vulnerable to this problem because they fit the pilot's idea of what a runway should look like. Pilots under stress (and you *are* under stress if you are not sure of the runway to land on) and pilots suffering from fatigue are particularly vulnerable to this error. The pilot's focus is on the wrong thing. Pilots may believe strongly that they have made the correct decision and miss the cues that let them know the truth. Knowledge is a key in this situation. The pilot should be using the airport diagram and have knowledge of the markings used on the airport surface. Few pilots would land on a taxiway if they realized that all runway markings are white and all taxiway markings are yellow. Also, it pays to be aware that all runways have large white numbers painted on the approach end to designate the runway direction.

Position and Hold

Another area where pilots are more likely to cause a runway incursion involves the tower's instructions to "taxi into position and hold." The pilot acknowledges the instruction but forgets and takes off without a clearance thus causing a runway incursion that could have the potential for a collision. It may seem impossible, but it is easy to forget what clearance you were issued in the short time it takes to taxi onto the runway.

Remember, human memory only holds things for a very short time and you may have a lot on your mind. You are adding power, concentrating on moving the aircraft so that it is lined up on the centerline of the runway, thinking of the proper rotation speed, assessing the wind, as well as determining the heading to turn to after takeoff, the altitude to climb to before turning, the first navigation fix, and any pertinent emergency procedures. There is plenty to occupy the mind, thus it is very possible that you will not remember what the clearance was when you get into position for takeoff. To mitigate the undesirable consequences of this error, you must maintain focus on the clearance to taxi into position and hold. One way to do this is to tell yourself several times while you are moving into position that you are going to hold. Also, when able, it is a good practice to turn the landing light on when you receive the takeoff clearance. These actions will help hold the clearance in your mind.

Expectations and "Noise"

Let's look at another possible runway-incursion scenario. Aircraft number one is in position on the runway awaiting takeoff clearance. Aircraft number two is holding in position on a crossing run-

way. The tower issues a takeoff clearance to aircraft number two, but both aircraft begin their takeoff roll. This is obviously a very dangerous situation. It happened because the pilot of aircraft number one was anticipating a takeoff clearance and missed the aircraft call sign. The pilot only heard "cleared for takeoff." This is called expectancy and is the "we hear what we want to hear and see what we want to see" syndrome. Whenever expectations are high, we are likely to make a false assumption and only hear that part of the conversation that interests us. This can happen at any time, but is more likely to happen if we are under stress (for example, we are in a hurry to go) or we are fatigued.

Another possibility is for part of a communication to be lost due to distortion or noise. Humans are very good at filling in missing information, so a pilot may assume that the takeoff clearance was for his/her aircraft. This happened at Tenerife. There was a squeal that blocked a key transmission and an opportunity was missed.

To mitigate these errors, you first must realize that they *can* happen to you. When you are in position on a runway ready to go, you must pay particular attention to radio communications so that you are absolutely positive that the clearance was for your aircraft. If there is the slightest doubt, ask the controller. Be aware, listen carefully.

Knowing the Rules

The area of ground operations covered by Title 14 Code of Federal Regulations section 91.129(i) is confusing to many pilots. This section states:

No person may, at any airport with an operating control tower, operate an aircraft on a runway or taxiway, or take off or land an aircraft, unless an appropriate clearance is received from ATC. A clearance to "taxi to" the takeoff runway assigned to the aircraft is not a clearance to cross that assigned takeoff runway, or to taxi on that runway at any point, but is a clearance to cross other runways that intersect the taxi route to that assigned takeoff runway. A clearance to "taxi to" any point other than assigned takeoff runway is clearance to cross all runways that intersect the taxi route to that point.

Many pilots believe that if they receive a clearance to the takeoff runway or if they are told to follow an aircraft that has received a clearance to cross, they too are cleared to cross the runway. Not so! Your aircraft must be specifically cleared to cross an active runway in order to be in compliance with this provision. Remember, if you are ever in doubt, verify your clearance to cross with the controller.

Knowing the Territory

The wrong-runway departure accident at Lexington, Kentucky, in August 2006 pointed out the importance of positively identifying the departure runway. Prior to departure, ensure that the aircraft is aligned with the correct runway. Confirm this with the magnetic heading data from the aircraft's flight instruments—primarily the magnetic compass, since there is always a chance the heading indicator may be set incorrectly.

Surface operations require the same high level of pilot discipline as flight operations. We must always strive to maintain the highest level of airmanship. Whenever you are moving an aircraft on the surface of an airport, maintain awareness, be vigilant, think, avoid runway incursions, and remember: You *can* make a difference.

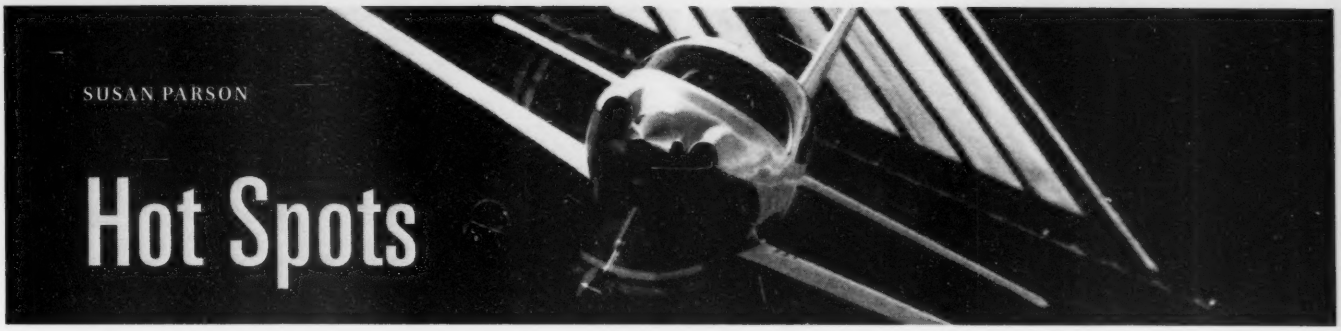
Kenneth MacDonald holds an airline transport pilot certificate and has more than 24,000 hours of flight time as an instructor and corporate pilot. He currently consults in aviation safety and is an IS-BAO auditor.

© 2008 Kenneth MacDonald. Written permission from the author required to reprint this copyrighted article.

James Williams photo

SUSAN PARSON

Hot Spots



Understanding Experimental vs Type Certificated Aircraft

One of the first things pilots learn is that aviation, like so many other aspects of life, is full of trade-offs. A trade-off usually refers to losing one quality or aspect of something in return for gaining another quality or aspect. It implies a decision to be made with full comprehension of both the benefits and costs of a particular choice. For example, your trusty Cessna *Skyhawk* may have four seats, but you probably have to leave one of them empty if you choose to top off the fuel tanks. You may relish the freedom of personal transportation that your airplane offers, but the trade-off is accepting the reality that light aircraft cannot be safely flown in all kinds of weather. Those pilots who try to have it all—be it a fully loaded and fully fueled airplane, an airline-style schedule in a small airplane, or some other combination—too often trip on the trade-offs and find themselves immortalized in the annals of aircraft accident history.

Unfortunately, recent aircraft accident history bespeaks some pilots' failure to understand another aviation trade-off: The difference between aircraft categorized as "experimental" and those manufactured according to the standards of Title 14 Code of Federal Regulations (14CFR) part 23 (or the predecessor regulations). Statistics on amateur-built accidents show that the fatal accident rate is increasing and amateur-built aircraft fatal accidents account for an astounding 24 percent of all general aviation (GA) fatal accidents in fiscal year 2008. The numbers show three distinct spikes in accidents grouped around total hours accumulated on the airframe: The first five hours of flight for just-completed amateur-built aircraft, another spike just after the 40-hour test-flight period, and a third spike at 100 hours.

The data also indicate that "fast glass"—high-performance composite amateur-built aircraft—continue to drive amateur-built accident numbers. Since 2002, for instance, there have been 25 accidents involving amateur-built aircraft constructed from kits for the Lancair IV and IV-P. Many occurred at some point in the airport traffic pattern, and 14 of the 25 accidents involving aircraft built from these kits were fatal. These numbers suggest that some amateur aircraft builders may not entirely understand the trade-offs they are inherently making when they opt for an experimental amateur-built aircraft over an aircraft type certificated in accordance with 14 CFR part 23.

Experimental

In regulatory parlance, "experimental aircraft" is a specific term for an aircraft flown with an airworthiness certificate in the experimental category. The FAA issues experimental certificates for several purposes. These include air racing, exhibition, market surveys (e.g., sales demonstration), research and development, testing for compliance, and operating amateur-built aircraft.

Aircraft in the experimental category must be physically marked as experimental with the marks displayed near the entrance to the cabin, flight deck, or pilot station. For amateur-built aircraft, FAA Order 8130.2F, *Airworthiness Certification of Aircraft and Related Products*, also specifies that the operating limitations for the aircraft contain a requirement for a passenger warning placard to be displayed in full view of all occupants. This placard must state that "this aircraft is amateur-built and does not comply with the federal safety regulations for standard aircraft."

Even those experimental aircraft based on conventional designs may have very *un*conventional performance and flight characteristics.

At least 30,000 amateur-built aircraft exist in just the United States. Although many are based on conventional designs, others are very non-conventional—sometimes in terms of appearance and often in terms of performance and operating characteristics.

Part 23

The airworthiness standards for airplanes in the normal, utility, acrobatic, and commuter categories are described in 14 CFR part 23. By contrast with experimental category aircraft, those produced in accordance with 14 CFR part 23 must meet a number of requirements intended to ensure airworthiness in areas such as performance, stability, controllability, and safety mechanisms. The nature of the type design and production approval processes for aircraft produced in accordance with 14 CFR part 23 ensures that the flight characteristics of each aircraft sold under a particular make and model are precisely predictable.

Aviation, like so many other aspects of life, is full of trade-offs.

Specifically, a type certificate (TC) means that the design of the aircraft has been fully evaluated and tested. The TC includes the type design, operating limitations, the Type Certificate Data Sheet (TCDS), applicable regulations, and other conditions or limitations prescribed by the Administrator. The TC is the foundation for other FAA approvals, including production and airworthiness approvals.

During the type certification process, the design is developed and tested by the company to show compliance with the various requirements of part 23. These tests, including flight tests, usually begin with a proof-of-concept, or prototype, airplane. Once the testing has shown compliance with the regulations and meets the desired performance parameters, then the manufacturer will build "conforming" airplanes for final testing. When the company is satisfied with these test results, the FAA reviews the data and will conduct its flight tests. These tests usually occur over time and in the end the FAA makes the "finding of compliance" to the regulations. After all the data is approved and FAA completes the various flight tests, including those associated with flight performance and handling characteristics, then FAA issues a Type Certificate.

The next step requires the manufacturer to develop processes to ensure that production will precisely and consistently replicate the approved prototype. When production and assembly processes have been approved, the manufacturer obtains a production certificate authorizing full production of the aircraft.

There is continued FAA surveillance of the manufacturer's processes as long as the aircraft remains in production. If problems emerge in an aircraft after it enters production and service, the FAA issues airworthiness directives (AD) requiring specific action to correct the identified problems.

Type Certificates, Production Certificates, and Airworthiness Certificates

Type Certificate (TC): A TC is a design approval issued by the FAA when the applicant demonstrates that a product complies with the applicable regulations. As defined by Title 14 Code of Federal Regulations (CFR) section 21.41, the TC includes the type design, the operating limitations, the Type Certificate Data Sheet (TCDS), the applicable regulations with which the Administrator records compliance, and other conditions or limitations prescribed by the Administrator. The TC is the foundation for other FAA approvals, including production and airworthiness approvals.

Type Certificate Data Sheet (TCDS): The TCDS is a formal description of the aircraft, aircraft engine, or propeller. It lists limitations and information required for type certification, including airspeed limits, weight limits, thrust limitations, etc.

Production Certificate: The production certificate is an approval to manufacture duplicate products under an FAA-approved type design (i.e., type certificate or supplemental type certificate). The holder of a production certificate may obtain an airworthiness certificate for aircraft produced under the production certificate without further showing that it complies with the appropriate airworthiness standards. The applicant must follow production application and approval processes.

Airworthiness Certificate: An airworthiness certificate is an FAA document which grants authorization to operate an aircraft in flight. An airworthiness certificate is issued to a properly registered aircraft that has been found to conform to its Type Certificate and to be in a condition for safe operations.

Supplemental Type Certificate (STC): An STC is issued when an applicant has received FAA approval to modify an aircraft from its original design. The STC, which incorporates by reference the related TC, approves not only the modification, but also how that modification affects the original design.

Note: Special-light sport aircraft (S-LSA) are not designed or manufactured in accordance with 14 CFR part 23. Rather, they are designed and produced in accordance with consensus standards developed by American Society for Testing and Materials (ASTM) and found acceptable to the FAA. These consensus standards permit the serial production of duplicate aircraft without a type certificate or a production certificate.

What's the Trade-off?

The basic trade-off between a certificated (14 CFR part 23) airplane and an experimental, amateur-built aircraft is that the experimental, amateur-built aircraft has not met any minimum performance standards. For example, a single-engine airplane certificated under 14 CFR part 23 cannot have a maximum stall speed (V_s0) greater than 61 knots, and it cannot exceed 15 degrees of roll or yaw with normal use of the flight controls during entry and recovery from a stall. An experimental aircraft, on the other hand, can have a stall speed that is much greater, and it can significantly exceed 15 degrees of roll or yaw during stall entry and recovery.

Because of the freedom that the rules provide for experimental amateur-built aircraft, even those experimental aircraft based on conventional designs may have very *un*conventional performance and flight characteristics. Designs that produce higher cruising speeds may offer those benefits at the expense of the more docile low-speed flying characteristics that pilots have learned to expect when flying conventional 14 CFR part 23 aircraft. It is imperative for amateur builders to recognize that the trade-offs inherent in some of today's designs may not be benign. For more information, go to http://www.faa.gov/aircraft/gen_av/ultralights/amateur_built/.

Safety Tips

A thorough understanding of performance and handling characteristics is important for safe operation of any aircraft, but accident statistics strongly suggest that amateur builder/pilots need to go the proverbial extra mile. In aircraft designed for higher speed cruise, pilots must become extremely familiar with the aircraft's handling characteristics at lower speeds and consider installation or retrofit of devices that enhance stall awareness. Expert flight instruction on a regular basis is also a good idea.

Susan Parson is a Special Assistant in Flight Standards Service's General Aviation and Commercial Division. She is an active general aviation pilot and flight instructor.

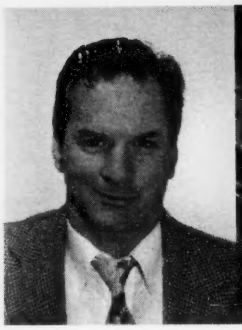
Photo courtesy of Garmin

Improving Amateur-Built Aircraft Safety

High-performance composite amateur-built aircraft, sometimes known as "fast-glass" airplanes, continue to drive amateur-built accident numbers. The speed and performance of these aircraft make them well-suited for personal transportation use and, because higher speed results in higher energy crashes, the lethality of these accidents is significant. Since 2002, for example, there have been 25 accidents involving amateur-built aircraft constructed from kits for the Lancair IV and IV-P, and 14 of the 25 were fatal. Aviation safety professionals in government and industry are concerned that a number of these accidents took place not in instrument meteorological conditions (IMC), but rather in day VFR (visual flight rules) conditions. Many involved loss of control at some point in the airport traffic pattern.

To address this concern, as well as accidents involving other amateur-built aircraft, government and industry have teamed up to form the Amateur-built Aircraft Subcommittee of the General Aviation Joint Steering Committee (GAJSC). This group is charged with gathering and analyzing aviation accident data and using this information to make aviation safer. Accordingly, the Amateur-built Aircraft Subcommittee will analyze fatal and non-fatal accident numbers and look for ways to improve the amateur-built safety record. It may develop initiatives on its own or turn to its members—Experimental Aircraft Association (EAA), FAA, the EAA Homebuilt Aircraft Council, and industry groups—to develop safety programs or other initiatives.

Earl Lawrence, EAA's vice president of industry and regulatory affairs, and John Duncan, manager of the FAA's General Aviation and Commercial Division, co-chair the subcommittee. Its members include other EAA and FAA officials and amateur-built industry leaders.



MARTIN BAILEY

Nuts, Bolts, and Electrons

Ready or Not? Part 2

Editor's Note: This is the second article in a two-part series on use of the maintenance Personal Minimums Checklist for Light Sport Aircraft repairmen. Using this checklist will allow you to more confidently answer the question, "Are you ready or not?"

In the September/October 2008 issue we discussed a new repairman certificate for Light Sport Aircraft (LSA) with two ratings: Experimental Light Sport Aircraft (ELSA) repairman with an inspection rating, and Special Light Sport Aircraft (SLSA) repairman with a maintenance rating. These ratings authorize LSA owners, maintenance personnel, and pilots to perform certain inspection and maintenance functions. Also, we identified techniques to help you determine your readiness to exercise your LSA maintenance authorizations and responsibilities.

Using the FAA's *Personal Minimums Checklist for Maintenance* as a guide to validate maintenance accomplished on ELSA and SLSA aircraft, we answered the "Before the Task" questions in Part 1. In Part 2, we will answer the "After the Tasks" questions. Before we look at the specifics, though, here's a general note to keep in mind. When performing maintenance on SLSA, all of Title 14 Code of Federal Regulations (14 CFR) part 43 applies to any aircraft that has a special airworthiness certificate. Specifically:

Section 43.1 (d) This part applies to any aircraft issued a special airworthiness certificate in the light-sport category except:

1. *The repair or alteration form specified in sections 43.5 (b) and 43.9 (d) is not required to be completed for products not produced under an FAA approval;*
2. *Major repairs and major alterations for products not produced under an FAA approval are not required to be recorded in accordance with appendix B of this part; and*
3. *The listing of major alterations and major repairs specified in paragraphs (a) and (b) of appendix A of this part is not applicable to products not produced under an FAA approval.*

If, on the other hand, you are performing maintenance on an Experimental Light Sport Aircraft, 14 CFR part 43 does not apply according to Section 43.1 (b), unless the FAA has previously issued a different kind of airworthiness certificate for that aircraft.

At a minimum, here are the things you'll want to address after any given inspection or maintenance task:

Did I perform the job task to the best of my ability?

It is common sense that any person performing maintenance will place emphasis on safety. The question to ask yourself when performing a maintenance task is the one above. Just as if you were preparing for your first solo flight, you must be confident that your abilities will allow you to perform the task correctly. Title 14 CFR section 65.107 (d) states:

The holder of a repairman certificate (light-sport aircraft) with a maintenance rating may not approve for return to service any aircraft or part thereof unless that person has previously performed the work concerned satisfactorily. If that person has not previously performed that work, the person may show the ability to do the work by performing it to the satisfaction of the FAA, or by performing it under the direct supervision of a certificated and appropriately rated mechanic, or a certificated repairman, who has had previous experience in the specific operation concerned.

[Note: A repairman with a Light Sport Aircraft maintenance or inspection rating may not supervise non-certificated personnel performing aircraft maintenance.]

Exercising the privileges of these ratings means accepting responsibility for performing the job correctly. That, in turn, means ensuring that you have the knowledge, skills, tools, facility, and the right equipment to accomplish the task.

Was the job task performed to be equal to the original?

When performing maintenance using the acceptable and/or approved data and resources, the objective is to return the product to its original, or properly altered, condition. At the same time, keep in mind that making the repair stronger is not always a good thing, as this action may or may not enhance the integrity of the repair. Consider, for instance, that aircraft structures are designed to be flexible in some areas. Finding a crack in a difficult area to repair might create a mindset to make the repair stronger so it will never crack again, but 14 CFR section 13(b) states that the condition of the aircraft, airframe, aircraft engine, propeller, or appliance worked on will be at least equal to its original or properly altered condition (with regard to aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness).

If you want to make a repair stronger than the original, make sure you have the required manufacturer's authorization, along with the established and approved processes and guidelines.

Was the job task performed in accordance with appropriate data?

According to 14 CFR section 43.13 (a) appropriate data can be the manufacturer's maintenance instructions, airworthiness directives (AD), service bulletins, supplemental type certificates (STC), DER-approved data, videos, etc.

Did I use all the methods, techniques, and practices acceptable to industry?

Maintenance of Light Sport Aircraft requires a variety of basic tools. These include many common items that you may already have, such as a drill, a tape measure, files, and wrenches. Other tools might include a reamer for cleaning paint out of holes. Specialized tools are normally listed in the aircraft's maintenance manual. Good tool safety practices require that you establish controls to account for tools. These may include shadow boards, foam cut-outs in your toolbox, and a checklist.

Did I perform the job task without pressures, stress, and distractions?

One of the greatest challenges in today's fast-paced lifestyle is to ensure that we are not distracted or pressured when accomplishing a task. One way to help mitigate the hazard of distractions is to establish an interruption carryover log. Air carriers are required to have a shift carryover log/process. The log/process enables a new crew to continue where the previous crew had ended the task. The carryover log allows you to validate where you ended your task and ensure that nothing was overlooked when continuing the task. To mitigate the hazard of stress and pressures, one effective technique is to allow extra time. For example, if I believe that a given task is going to take two hours, I build an additional two hours into the plan.

Did I reinspect my work or have someone inspect my work before return to service?

It is critical that you, or better yet someone else, review the maintenance that you performed. I have found that it helps to use a flashlight, and to touch each component, line, etc., to ensure everything is tight and installed properly. No matter what, you should always be sure to have a second look/check at flight control installation and rigging.

Did I make the proper record entries for the work performed?

Along with the requirements of 14 CFR part 43 and the examples provided, it is in your best interest to provide detailed logbook entries enabling someone else to understand what you just accomplished. Even though part 43 is not a requirement for ELSA aircraft, using this standard adds value. For example, 14 CFR section 43.5 on approval for return to service states:

Just as if you were preparing for your first solo flight, you must be confident that your abilities will allow you to perform the task correctly.

No person may approve for return to service any aircraft, airframe, aircraft engine, propeller, or appliance, that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—

a. The maintenance record entry required by section 43.9 or section 43.11, as appropriate, has been made...

c. If a repair or an alteration results in any change in the aircraft operating limitations or flight data contained in the approved aircraft flight manual, those operating limitations or flight data are appropriately revised and set forth as prescribed in section 91.9 of this chapter.

Here are some maintenance log examples:

SLSA-Condition Inspections: Condition inspections must be recorded in the aircraft maintenance records using the following, or a similarly worded, statement:

"I certify that this aircraft has been inspected on [insert date] in accordance with the manufacturer's maintenance and inspection procedures, and was found to be in a condition for safe operation."

The entry will include the aircraft's total time-in-service, and the name, signature, certificate number, and type of certificate held by the person performing the inspection.

Federal Aviation Administration

Maintenance "Personal Minimums" Checklist

Before the task

- ☐ Have I had the proper training to support the job task?
- ☐ Do I have the knowledge to perform the task?
- ☐ Have I performed the task previously?
- ☐ Have I researched the regulations to ensure compliance?
- ☐ Am I mentally prepared to perform the task?
- ☐ Am I physically prepared to perform the task?
- ☐ Have I taken the proper safety precautions to perform the task?
- ☐ Do I have the technical data to perform the task?
- ☐ Do I have the proper tools and equipment to perform the task?
- ☐ Do I have the resources available to perform the task?

After the task

- ☐ Did I perform the job task to the best of my abillities?
- ☐ Was the job task performed to be equal to the original?
- ☐ Was the job task performed in accordance with the appropriate data?
- ☐ Did I use all the methods, techniques, and practices acceptable to the industry?
- ☐ Did I perform the job task without pressures, stress, and distractions?
- ☐ Did I reinspect my work or have someone inspect my work before return to service?
- ☐ Did I make the proper record entries for the work performed?
- ☐ Did I perform the operational checks after the work was completed?
- ☐ Am I willing to sign on the bottom line for the work performed?
- ☐ Am I willing to fly in the aircraft once it is approved for the return to service?

Maintenance, Excluding Inspections: Maintenance, excluding inspections, must be recorded in the aircraft maintenance records in accordance with 14 CFR 43.9(a).

ELSA-Condition Inspections: Condition inspections must be recorded in the aircraft maintenance records using the following, or a similarly worded, statement:

"I certify that this aircraft has been inspected on [insert date] in accordance with the scope and detail of appendix D to part 43 or the manufacturer's inspection procedures, and was found to be in a condition for safe operation."

The entry will include the aircraft's total time-in-service, and the name, signature, certificate number, and type of certificate held by the person performing the inspection.

Did I perform the operational checks after the work was completed?

Operational checks should always be performed in order to validate the function of the component being checked. It is also a check of the aircraft systems as a whole, in accordance with the maintenance instructions.

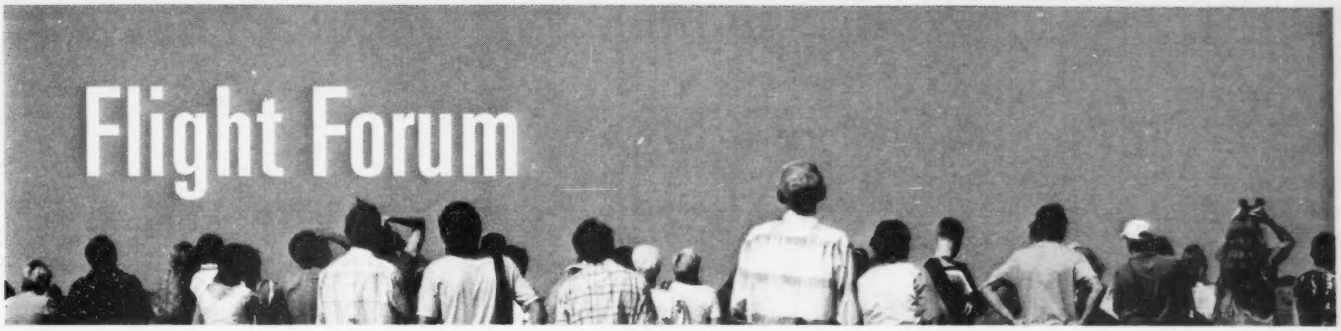
Am I willing to sign on the bottom line for the work performed?

This question is directly related to the next question: "Am I willing to fly in the aircraft once it is approved for return to service?" When you sign on the dotted line, you must not take it lightly. By signing you are accepting the responsibility of all previous Personal Minimums Checklists questions, along with the responsibility that this aircraft is safe for flight.

Am I willing to fly in the aircraft once it is approved for return to service?

In certain situations, it is human nature to take greater risk when it only affects us. For example, I used to ride motorcycles and, from time to time, I rode without safety gear. With my son involved, however, my perspective changed: Not only do I dress him like a football player, but I also try to set an example by never riding without proper safety gear. The same principle works for aircraft maintenance: Ask yourself if you would allow your loved ones to fly in the airplane you just returned to service. Using the Maintenance Personal Minimums Checklist will help you to more confidently answer the question, "Are you ready or not?"

Martin Bailey is an Aviation Safety Inspector with Flight Standards Service's General Aviation and Avionics Branch.



But What Caused the Smoke?

I have a question regarding the September/October 2008 article, "Where There's Smoke," by Bob Castle. Mr. Castle is obviously a skilled pilot and the article is well written, but no mention is made of what started the fire. Are we to assume it was the portable DVD in the back and a portable CD player in front, powered by the aircraft electrical outlets (cigarette lighter type), that caused an electrical overload and subsequent fire?

We who fly *Cherokees* would like to have a bit more information on how to prevent such an occurrence, if that is at all possible.

— Gene Olsen
via the Internet

The article's goal was to emphasize the kinds of preparation and action required when an inflight fire occurs, but you make a very good point about providing information on the cause of this particular fire. We contacted Mr. Castle and here is his response:

The investigation determined the cause of the fire to be from the rear-seat spring contacting the battery terminals. The short caused the seat spring to heat and catch the seat material on fire.

There is an airworthiness directive (AD), 81-23-05, that addresses this exact situation. According to the aircraft logs, this AD had been complied with by the installation of plywood sheeting underneath the rear seat which eliminates inspection of the area on preflight. However, at some point, the plywood was removed from the mishap aircraft and I was unaware of the potential for fire caused by this situation.

The investigation also discovered that the mechanic who held the Inspection Authorization and had signed off the last annual inspection had never physically looked at the airplane as required. He instead relied on the word of another mechanic.

It is certainly worthwhile to look into the maintenance history of the airplanes we fly. Obviously, we can't look into every nook and cranny, but a healthy knowledge of potential trouble areas can help a pilot avoid some of these traps.

Medical Expiration Dates

I read the article concerning the changes to medical certificate expirations in the September/October issue. I am 39 and just renewed my medical in May, does it expire in two years or five? Who do I need to ask this question to get an official response?

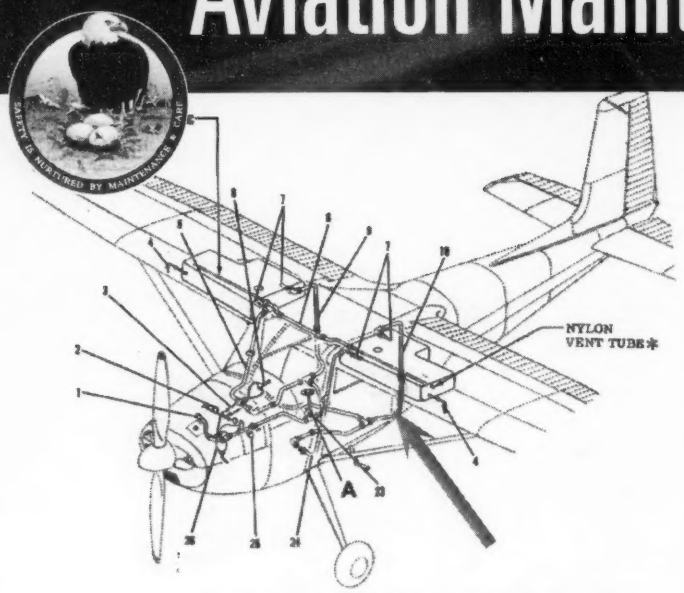
— Name withheld
via the Internet

We asked Dr. Warren Silberman of the Aerospace Medical Certification Division and he said that your medical expires in five years. This rule is retroactive so that airmen who were under age 40 and obtained a third class medical certificate in 2004 would now have a current medical certificate good until some time in 2009.

FAA Aviation News welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be referred to their local Flight Standards District Office or Air Traffic facility. Send letters to Editor, FAA Aviation News, AFS-805, 800 Independence Avenue, SW, Washington, DC 20591, or FAX them to (202) 267-9463, or e-mail them to AviationNews@faa.gov.

DANIEL ROLLER, *EDITOR, AVIATION MAINTENANCE ALERTS*

Aviation Maintenance Alerts



Cessna: 180J; Chafed Fuel Line; ATA 2820

A mechanic writes, "Two aileron cables, one flap cable, and the fuel line are all routed through the L/H lower aft door post area. This fuel line is protected by a plastic sleeve, but an (aileron) cable wore through the sleeve (and began cutting) into the fuel line. This line (P/N 0500106-326) is approximately 20 inches long with four bends. I suggest a one time inspection in case other aircraft might have this problem."

(A search of the FAA Service Difficulty Reporting System database revealed five additional reports for this part number, all from similar chafing cables. See following pictures.)

Part Total Time: 2,365.0 hours.

Cessna: T206H; Failed Main Gear Castings; ATA 5343

(The following combines two reports from the same submitter, each describing the same broken part found on different 206 aircraft.)

A technician states, "This aircraft is operated on mostly unimproved airstrips in Lesotho, South Africa. The part is the same (as found on) 206 F and G models, and was installed at the time of aircraft manufacture (P/N 1211601-3). This casting cracked and failed upon landing. The aft bolt was also cracked and sheared. (This aircraft) had a normal approach and landing (which resulted in) the L/H gear leg breaking loose from the outboard casting and pushing backwards, pinching the brake line and locking up the left brake."

(Part time: 1,776.6 hours.)

About the second aircraft, Rocky says, "This casting is cracked in three different locations. We operate (many) of these aircraft and have a long history with the (model) 206. We have seen cracks of this nature before, but rarely with so little time in service."

(Part Total Time: 1,250.0 hours.)

(A search of the FAA Service Difficulty Reporting System data base revealed seven similar reports.)

Part(s) Total Times: 1,776.0 and 1,250.0 hours, respectively

Lycoming: TIGO-541-E1A; Incorrect Exhaust Gaskets; ATA 7810

(This engine report relates to a Piper PA31P and an ensuing accident. It's not often submitters will include such details of their "thinking processes" as can be found here, lending high instructive value otherwise missing from a collection of facts. "Thank you" for the extra effort—Ed.)

An aircraft mechanic states, "I found melted wiring at the number 6 cylinder—and behind it. The P-lead for the R/H magneto was melted, and when tested found to be shorted out. This (incapacitated) the right magneto. The number 6 bottom plug wire was hanging loose and the nut attaching the lead to the plug was melted off. Several other plug wires were burnt as well. The cause of this damage was a blown-out exhaust gasket on the number 6 cylinder. When this gasket failed, hot exhaust was allowed (to escape) burning up the plug wires and the R/H magneto P-lead." "The number 6 bottom plug wire was from the L/H magneto. The bottom number 4 wire's protective coating was also burnt off. So, now (at best) we have one magneto working and only firing on five cylinders—plus a large exhaust leak which will lower manifold pressure.

"I performed a high tension lead test on the R/H side of the right engine; number 6 tested bad—

the rest were okay. No continuity test was done at this time. (Next...) the original R/H propeller was removed and a test propeller installed. The engine was started...but idled very rough. It would not take throttle or make any power above idle. The R/H magneto was disconnected and the engine started again: it idled much better and would take throttle, although it ran poorly.

"The lower plugs were removed to facilitate the exhaust removal—they showed signs of a rich mixture or incomplete burn. When I disassembled the R/H exhaust stack on the right engine (cylinders 2, 4, and 6) the following was found:

(a) "On the number 2 cylinder all exhaust nuts were loose—each about two turns. The exhaust gaskets were intact, but they appeared to be a copper gasket (P/N 76048). The parts book (specifies) a steel gasket (P/N 78056).

(b) "The number 4 cylinder's inboard forward nut, inboard aft nut, and outboard forward nut were all found loose. The outboard aft nut was tight. The exhaust gaskets were intact and appeared to be the copper type (P/N 76048).

(c) "The number 6 cylinder exhaust stack had a gap between the stack and the cylinder where the exhaust gasket was blown out. There were three small pieces of gasket left that appeared to be the remains of a copper gasket (P/N76048)."

"The end result (of this defect) was an off-field landing after the right engine failed. The aircraft landed upright with the gear up, flaps up, cowl flap closed, magneto switches on, fuel pumps on, fuel selectors on inboard tanks, and the R/H engine feathered. The L/H propeller (sustained) three bent blades, the R/H just one. (There was) significant damage to the R/H wing, both lower cowls, and the aircraft's belly. The pilot did not receive any serious injury."

Part Total Time: (unknown).

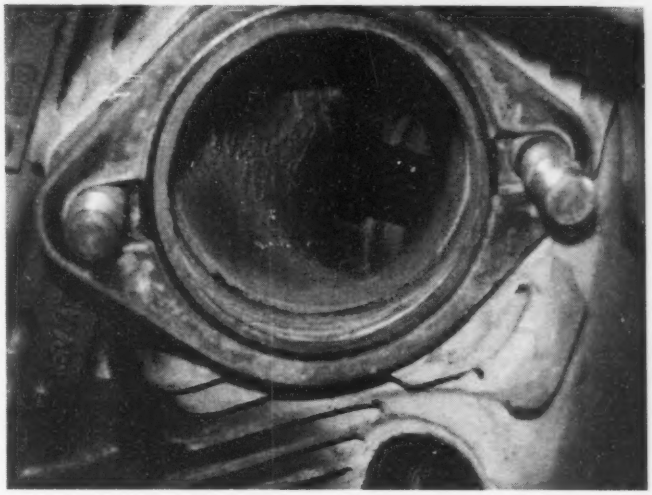
Diamond: DA40; Cracked Rear Door Hinge; ATA 5210

(The following submission combines two short M or D reports describing separate defects on the same model but different N-numbered aircraft, and on different dates. The next two Alert entries also contain combined discrepancy reports, providing a total of six reports—all referencing the same defect.)

A mechanic writes the same description for two different reports. "The rear hinge (can be seen) developing cracks in the (laminate) fibers under normal operating conditions. A probable cause: the rear hold-open cylinder is causing stress on the hinge point." (Rear door P/N: D41-5221-00-00.)

Part Total Times: 984.0 and 991.0 hours (respectively).

Lycoming: IO360-L2A; Seized Exhaust Valve; ATA 8530



An inspector for a repair station provides the following discrepancy report concerning a Cessna 172. "During flight the engine started running rough and lost power. An emergency landing was completed without damage or injury. Maintenance found the number three exhaust valve seized in the valve guide. Further investigation found the guide (P/N 74230) broken in the cylinder head. This operator has 17 Model 172S aircraft with the new roller tappet engines. We have been performing an SB388C (service bulletin) inspection on the rest of the fleet and have found the majority of the exhaust valves for all cylinders to be tight in the guides. Lycoming SI1485 (service instruction) recommends a 1,000-hour interval for these engines for the SB388C inspection. Our current fleet has between 650 and 900 hours total time per aircraft. We will be initiating a 600-hour interval for the SB388C for our fleet. We have also revised our (fuel) leaning procedures."

(A search of the FAA Service Difficulty Reporting System data base revealed 11 reports on this part number. Nice picture, Pat. Thanks!)

Part Total Time: 888.7 hours.

The Aviation Maintenance Alerts *(Advisory Circular 43.16A) are prepared from information submitted by those who operate and maintain civil aeronautical products. This procedure gives* Alerts' *readers prompt notice of conditions reported via a Malfunction or Defect Report (M or D) or a Service Difficulty Report (SDR). For more Alerts, go to www.faa.gov/aircraft/safety/aviationmaintenance/.*

JAMES WILLIAMS

AV News

Special Awareness Training Required for Washington, DC Metropolitan Area

The FAA is requiring "special awareness" training for any pilot who flies under visual flight rules (VFR) within a 60-nautical-mile (nm) radius of the Washington, DC VHF omni-directional range/distance measuring equipment (DCA VOR/DME). This training has been developed and provided by the FAA on its www.FAASafety.gov Web site and focuses primarily on training pilots on the procedures for flying in and around the Washington, DC, Metropolitan Area Defense Identification Zone (ADIZ) and the Washington, DC, Metropolitan Area Flight Restricted Zone (FRZ). The direct link to the course is http://www.faasafety.gov/gslac/ALC/course_catalog.aspx and scroll down to "Navigating the New DC ADIZ.

The rule will reduce the number of unauthorized flights into the airspace of the Washington, DC, Metropolitan Area ADIZ and FRZ through education of the pilot community.

This rule is effective February 9, 2009. For more information about the rule, you may visit: http://edocket.access.gpo.gov/2008/pdf/E8-18619.pdf.

FAA Issues AD on Diamond Twin Star

The FAA is adopting a new airworthiness directive (AD) for the Diamond *Twin Star.* This AD results from mandatory continuing airworthiness information (MCAI) issued by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

"The original designed bellcrank for the aileron control system in the wing needed to be installed with slightly bent rod ends during production of the aircraft to avoid friction and possible chafing. In addition to being a nonpreferable production practice, this creates the risk of replacement parts being installed during subsequent in-service maintenance without being bent or not being bent correctly. This condition, if not detected and corrected, could lead to chafing damage of the aileron control system and consequent loss of control of the aircraft."

This AD became effective September 17, 2008. To view full AD visit: http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAD.nsf/0/30686333AE4F5D25862574A4004E79C0?OpenDocument

New AC on Aviation Training Devices

Advisory Circular (AC) 61-136 provides information and guidance for Aviation Training Device (ATD) manufacturers seeking FAA approval of basic aviation training devices (BATD) or advanced aviation training devices (AATD) under Title 14 Code of Federal Regulations (14 CFR) section 61.4(c). This AC also provides information and guidance for people who intend to use a BATD or an AATD for activities involving pilot training or certification, other than for aircraft type specific training or for an aircraft type rating. The FAA will determine and approve appropriate uses for an ATD.

During the past several years, significant developments in computer simulation and visual graphic processing ability have led to the increased general aviation (GA) use of advanced flight simulation training devices. The GA community is using the new and emerging simulation technology to provide increasingly effective training capability at reduced cost. However, the FAA determined that not all evaluated simulation technology is acceptable for GA training purposes. Therefore, the FAA is consolidating the existing guidance into this publication to formally recognize the suitability of certain GA flight simulation training devices.

This AC also contains procedures regarding the approval for the use of an ATD under 14 CFR parts 61 and 141. Criteria specified in this AC are those used by the FAA to determine whether an ATD is qualified and, if qualified, whether it is qualified at the BATD or the AATD level.

To view the AC visit: http://rgl.faa.gov/Regulatory_and_Guidance_Library/

rgAdvisoryCircular.nsf/0/37E40A5E69B18FEF8625748E005B327A?OpenDocument

South Florida Gets Satellite Broadcast Services

Pilots flying in aircraft equipped with Automatic Dependent Surveillance-Broadcast (ADS-B) avionics in South Florida now receive free traffic and weather information on their cockpit displays. This marks the first time pilots are able see the same traffic information that's seen by air traffic controllers.

The display of traffic information (Traffic Information Service-Broadcast, or TIS-B) and weather information (Flight Information Service-Broadcast, or FIS-B) was made possible by installing 11 ground stations in South Florida by ITT Corp. The ground stations transmit satellite signals showing aircraft locations to pilots and controllers.

Flight information now being broadcast free to pilots includes graphical displays of weather tracked by the National Weather Service and essential flight information, including special-use airspace and temporary flight restrictions. The agency is on track in its aggressive plan to deploy ADS-B nationwide, beginning in Florida. ITT achieved initial operating capability in September.

ADS-B ground stations providing both TIS-B and FIS-B services will be deployed along the East and West Coasts, areas of the Midwest and portions of Alaska by 2010. By 2013, ADS-B coverage will be in place everywhere the FAA now provides radar coverage. There will also be coverage in places where radars can't be deployed, such as the Gulf of Mexico.

ITT was awarded the national contract to establish the ground infrastructure for ADS-B a year ago. The 11 sites in Southern Florida are Lakeland Linder Regional Airport, Hardee, Okeechobee, Dade-Collier Airport, Key West, St. Cloud, Sebastian Municipal Airport, Hobe Sound, Boca Raton Airport, Homestead Dade Marina, and Florida Keys Marathon Airport.

ICAO Safety Audit Gives U.S. High Score

The U.S. aviation system received a score of 91 out of 100 in a safety audit released earlier this year by the International Civil Aviation Organization (ICAO), a United Nations agency that oversees international civil aviation. "This audit by ICAO validates our systems approach to safety," said Robert A. Sturgell, acting administrator of the FAA. "The results show that our priorities are in the right place."

The U.S. score, which was well above the global average of 56, reflected U.S. compliance with more than 9,500 international safety standards. The FAA led U.S. preparations for the audit, which also included the National Transportation Safety Board, U.S. Coast Guard, and Pipeline and Hazardous Materials Safety Administration.

The team of ICAO auditors conducted a comprehensive audit of all aspects of U.S. civil aviation, including aircraft operations and airworthiness, accident investigation, navigation services, airports, personnel licensing, and legislation and regulations. The auditors interviewed technical experts and conducted site visits to government and industry facilities to assess overall safety oversight.

The Universal Safety Oversight Audit Program was established by ICAO in 1995 at the urging of the United States. It provides civil aviation authorities throughout the world with valuable information on the overall health and effectiveness of their airspace systems.

FAA Proposes AD on Maule M-4, M-5, M-6, M-7, and M-8 Airplane

FAA proposes to adopt a new airworthiness directive (AD) for certain Maule Aerospace Technology, Inc. Models M-4, M-5, M-6, M-7, and M-8 series airplanes. This proposed AD would require you to paint the top of the rear elevator control horn, the elevator control cable end attached to the top of the rear control horn, the bottom of the forward elevator control horn, and the elevator control cable end attached to the bottom of the forward control. This proposed AD would also require you to insert a supplement into your maintenance program (maintenance manual). This proposed AD results from two reports of accidents where reversed elevator control rigging was a factor. FAA is proposing this AD to reduce the likelihood of a mechanic rigging the elevator controls backwards, which could result in elevator movement in the opposite direction from control input. This condition could lead to loss of control. A compliance date has not been set. For more information, visit: http://edocket.access.gpo.gov/2008/pdf/E8-19168.pdf

SUSAN PARSON

Editor's Runway

'Tis the Season...

One of the greatest benefits of general aviation (GA) flying is the freedom it offers for personal transportation. In many ways, life is much less complicated when I use my flying club's Cessna 182 *Skylane* to visit family in North Carolina: I don't have to worry about making connections. I don't have to take off my shoes. And, I don't have to worry about how many three-ounce containers I can stuff into a single one-quart Ziploc® bag.

Yet, flying my club's plane is not without its own complications. A number of articles in this issue are focused on topics that GA pilots, especially those who are flying for holiday visits, need to consider at this time of year. With airplane heaters back in use in many parts of the country, Dr. Fred Tilton's Aeromedical Advisory on page 8 reminds us to be alert to the danger of carbon monoxide poisoning. Doug Stewart's article on page 2 and James Williams' companion story on page 6 offer tips for flying safely during winter's long dark nights. It's all about using knowledge, skill, proficiency, and common sense to make smart decisions and manage risk.

This sense of pressure, like carbon monoxide, had crept in and clouded my judgment long before I recognized its presence.

Hidden Hazards

The key to managing risk is to first recognize the hazard. As Dr. Tilton emphasizes in his column, carbon monoxide is especially dangerous because it can cause trouble before the pilot even realizes it is present. The external pressures that pilots face during the holiday travel season are similarly sneaky and every bit as dangerous to your health and safety. When you are responsible for getting your family to that Thanksgiving turkey feast a few hundred miles from home, you may not realize just how much "fly the mission" pressure you feel until you find yourself bumping against the limits of your aviation skill and experience.

I found myself in just that predicament while on a VFR flight some years ago. Heading south for a family gathering, I was flying in thick haze that increasingly obscured my forward visibility—not good at any time, but especially bad at a time when my route required a turn toward rising terrain. Just as the smell of exhaust provides an uncomfortable clue that you might have a carbon monoxide problem, the view—or, rather, the absence of a good view—through my windshield should have been a clue that I had a judgment problem. I eventually reversed course. But, why did I wait so long to do the right thing? The answer came to me during the drive to my intended destination: I had pressed my limits simply because diverting would cause my waiting family to worry. This particular pressure, like carbon monoxide, had crept in and clouded my judgment long before I recognized its presence.

Reality Rules

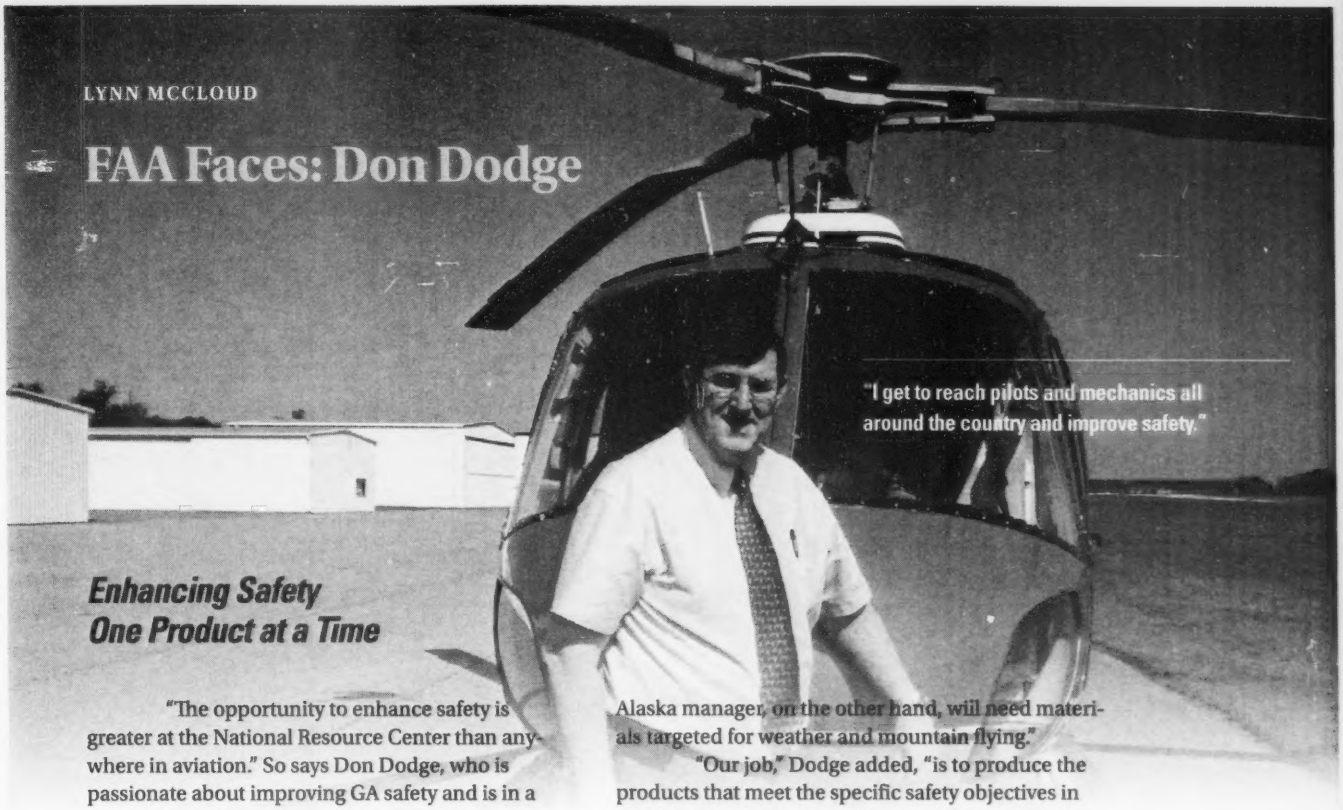
Several of the risk evaluation/risk management checklists in circulation these days advise the pilot to identify and mitigate all of the external pressures associated with any given flight. If I could offer just one piece of holiday flying advice, it would be to explicitly identify each and every "fly the mission" pressure you might experience on the airplane trips you plan to take this season. Developing this mental inventory before you go near the airplane makes those insidious pressures visible, much as a carbon monoxide detector in the airplane provides an early and visible warning of its presence. Knowing the reality of what you're up against is key, and it's always easier to develop mitigation strategies—including alternative transportation to your family's holiday turkey dinner—when you're safe and sound on the ground.

Happy holidays to all! Meanwhile, safe flights and happy landings.

Susan Parson is a Special Assistant in Flight Standards Service's General Aviation and Commercial Division. She is an active general aviation pilot and flight instructor.

LYNN MCCLOUD

FAA Faces: Don Dodge



"I get to reach pilots and mechanics all around the country and improve safety."

Enhancing Safety One Product at a Time

"The opportunity to enhance safety is greater at the National Resource Center than anywhere in aviation." So says Don Dodge, who is passionate about improving GA safety and is in a great position to make a profound difference.

Don Dodge is the frontline manager of the FAA Safety Team's (FAASTeam) National Resource Center in Lakeland, Florida. The National Resource Center supports the 128 FAASTeam members, along with scores of FAASTeam Representatives, whose number one assignment is to improve aviation safety through targeted education and outreach activities.

While FAASTeam members are positioned all across the country, the National Resource Center is the centralized location for developing and distributing safety products. "My job is to make sure we have standardized products delivered where they are needed, when they are needed," Dodge says. The products can range from pamphlets on aircraft performance, fuel management, and radio communications procedures to live television broadcasts on aeronautical decisionmaking and runway safety. The National Resource Center is exploring greater use of new media, including streaming video, podcasts, and YouTube programming. "We want to move into new technology and meet the safety education needs of younger pilots and mechanics," Dodge adds.

Dodge, who joined the National Resource Center in June 2008, is especially proud of the work his team does to meet the needs of FAASTeam members and representatives. "The FAASTeam Program Manager in New York will need one set of products to increase situational awareness in the busy skies around New York City," Dodge explains, "while the Alaska manager, on the other hand, will need materials targeted for weather and mountain flying."

"Our job," Dodge added, "is to produce the products that meet the specific safety objectives in the right format for the audience and, just as important, get them delivered on time." For example, the center is currently working on printed materials on autorotation for helicopter instructors and on video programming about maintenance human factors.

With 37 years in aviation, Dodge brings a rich background to his current position. He is a pilot with a Commercial Single and Multi, Instrument and Commercial Rotorcraft helicopter. He is also an A&P mechanic with Inspection Authorization (IA) and a Senior Parachute Rigger. His aircraft of choice flies vertically. Dodge flew rotorcraft when he ran his own fixed-based operation and has piloted Switzer, Bell, and Brantly helicopters. "Flying helicopters is like walking on air," Dodge says.

Dodge is qualified on a variety of aircraft. "At my business, I flew everything we worked on, so I've got quite a few hours and several ratings," Dodge says. About 12 years ago, his FBO's FAA Principal Maintenance Inspector talked Dodge into applying for an FAA job. He did and started his FAA career at the Columbia, SC, Flight Standards District Office. He hasn't looked back. "The reason I get up in the morning is to make flying safer," Dodge says, which is why he finds the assignment at the National Resource Center so exhilarating.

"I get to reach pilots and mechanics all around the country and improve safety," says Dodge. "It doesn't get any better than that."

U.S. Department
of Transportation

**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

Official Business
Penalty for Private Use $300

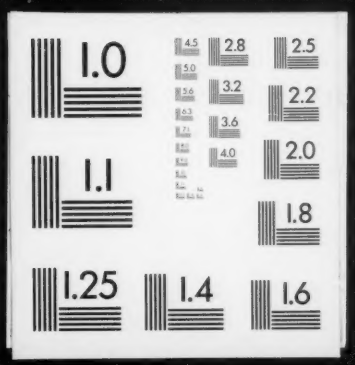
The Federal Aviation Administration Wants You!

Attention pilots, mechanics, and avionics technicians:

This is your chance to start a career in the exciting field of federal aviation safety. The FAA's Flight Standards Service is currently hiring aviation safety inspectors. We are looking for individuals with strong aviation backgrounds for inspector positions in the fields of maintenance, operations, and avionics. Both air carrier and general aviation inspectors are needed in all fields. There are positions available throughout the nation. This is your opportunity to use your experience to improve the already excellent safety record of U.S. civil aviation. As an aviation safety inspector you would be responsible for overseeing airmen, operators, and others to ensure they meet the rigorous safety standards set forth by the FAA.

The FAA is an excepted service agency of the United States Department of Transportation. Starting salaries range from $39,795 to $75,025 (FG 9- FG 12) plus locality pay (Locality pay is a geographical enhancement to your base salary). For more information please visit http://www.opm.gov/. Benefits include federal retirement and 401K type accounts. Health and other insurances are also available.

Qualifications vary depending on discipline. For details, please visit http://jobs.faa.gov/. Under "All Opportunities" you can search by job series 1825 or title containing "inspector." Start your application today.


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1
8.0
9.0